ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ

ಅಧಿಕೃತವಾಗಿ ಪ್ರಕಟಿಸಲಾದುದು

ಸಂಪುಟ ೧೫೦ Volume 150	ಬೆಂಗಳೂರು, ಗುರುವಾರ, ಡಿಸೆಂಬರ್ ೨೪, ೨೦೧೫ (ಪುಷ್ಯ ೩, ಶಕ ವರ್ಷ ೧೯೩೭) Bengaluru, Thursday, December 24, 2015 (Pushya 3, Shaka Varsha 1937)	ಸಂಚಿಕೆ ೫೧ Issue 51

ಭಾಗ ೧

ರಾಜ್ಯ ಸರ್ಕಾರದ ಮುಖ್ಯ ಆದೇಶಗಳು ಹಾಗೂ ಸುತ್ತೋಲೆ ಮುಂತಾದ ಎಲ್ಲಾ ಇಲಾಖೆಗಳಿಗೂ ಸಂಬಂಧಿಸಿದ ಆದೇಶಗಳು

ಅರಣ್ಯ ಪರಿಸರ ಮತ್ತು ಜೀವಿಶಾಸ್ತ್ರ ಸಚಿವಾಲಯ

ವಿಷಯ: ಅರಣ್ಯ ಇಲಾಖೆಯಲ್ಲಿ ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ಕರ್ನಾಟಕ ಲೋಕ ಸೇವಾ ಆಯೋಗದ ಮೂಲಕ ಭರ್ತಿ ಮಾಡುವುದಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಪಠ್ಯ ಕ್ರಮದ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ:
1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಎಫ್ಇಇ 82 ಎಫ್ಎನ್‌ಜಿ 2000, ದಿನಾಂಕ: 30–10–2003.
2. ಸರ್ಕಾರದ ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: ಎಫ್ಇಇ 366 ಎಫ್ಎನ್‌ಜಿ 2010, ದಿನಾಂಕ: 06–09–2012.
3. ಪ್ರಧಾನ ಮುಖ್ಯ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ (ಅರಣ್ಯಪಡೆ ಮುಖ್ಯಸ್ಥರು) ರವರ ಪತ್ರ ಸಂಖ್ಯೆ: ಬಿ9.ನೇಮಕಾತಿ.ವಿವ–04/2012–13, ದಿನಾಂಕ: 06–08–2015.

ಪ್ರಸ್ತಾವನೆ:

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮ ಸಂಖ್ಯೆ: (1)ರ ಆದೇಶದಲ್ಲಿ ಸರ್ಕಾರದ ಅಧಿಸೂಚನೆ ಸಂಖ್ಯೆ: ಎಫ್ಇಇ 54 ಎಫ್‌ಟಿಸಿ 1990, ದಿನಾಂಕ: 04–08–2003 ರಲ್ಲಿನ ವೃಂದ ಮತ್ತು ನೇಮಕಾತಿ ನಿಯಮಗಳನ್ವಯ ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ವೃಂದದ ನೇರ ನೇಮಕಾತಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಪಠ್ಯ ಕ್ರಮವನ್ನು ನಿಗಧಿಗೊಳಿಸಿ ಆದೇಶಿಸಲಾಗಿದೆ.

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮ ಸಂಖ್ಯೆ: (2)ರ ಅಧಿಸೂಚನೆಯಲ್ಲಿ ಕರ್ನಾಟಕ ಅರಣ್ಯ ಇಲಾಖೆ ಸೇವೆಗಳು (ನೇಮಕಾತಿ) (ತಿದ್ದುಪಡಿ) ನಿಯಮಗಳು 2012 ರಲ್ಲಿ ಕರ್ನಾಟಕ ಅರಣ್ಯ ಇಲಾಖೆ ಸೇವೆಗಳು (ನೇಮಕಾತಿ) ನಿಯಮಗಳು 2003 ರ ಶೆಡ್ಯೂಲ್ – 2ರಲ್ಲಿನ ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ವೃಂದದ ನೇಮಕಾತಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಸಮಗ್ರವಾದ ತಿದ್ದುಪಡಿಯನ್ನು ಮಾಡಲಾಗಿದೆ.

ಮೇಲೆ ಓದಲಾದ ಕ್ರಮ ಸಂಖ್ಯೆ: (3)ರ ಪತ್ರದಲ್ಲಿ ದಿನಾಂಕ: 06–09–2012 ರ ವೃಂದ ಮತ್ತು ನೇಮಕಾತಿ ನಿಯಮಗಳಿಗೆ ಸಮಗ್ರವಾದ ತಿದ್ದುಪಡಿಯಾದಂತೆ, ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ವೃಂದದ ನೇರ ನೇಮಕಾತಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಪೂರ್ವಭಾವಿ ಪರೀಕ್ಷೆಗಳು ಮತ್ತು ಮುಖ್ಯ ಪರೀಕ್ಷೆಗಳ ಎಲ್ಲಾ ವಿಷಯಗಳ ಪರಿಷ್ಕೃತ ಪಠ್ಯ ಕ್ರಮದ ಬಗ್ಗೆ ಆದೇಶ ಹೊರಡಿಸುವಂತೆ ಕೋರಿ ಪ್ರಧಾನ ಮುಖ್ಯ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ (ಮುಖ್ಯಸ್ಥರು ಅರಣ್ಯಪಡೆ) ರವರು ಸರ್ಕಾರಕ್ಕೆ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸಲ್ಲಿಸಿರುತ್ತಾರೆ.

ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರವು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರಿ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 128 ಅಪಸೇ 2015, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 10–09–2015.

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಲಾದ ಕಾರಣಗಳಿಂದಾಗಿ, ಸರ್ಕಾರವು, ಕರ್ನಾಟಕ ಅರಣ್ಯ ಇಲಾಖೆ ಸೇವೆಗಳು (ನೇಮಕಾತಿ) (ತಿದ್ದುಪಡಿ) ನಿಯಮಗಳು 2012 ರ ವೃಂದ ಮತ್ತು ನೇಮಕಾತಿ ನಿಯಮಗಳನ್ವಯ ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ವೃಂದದ ನೇರ ನೇಮಕಾತಿಗೆ

ಸಂಬಂಧಿಸಿದಂತೆ ಪೂರ್ವಭಾವಿ ಪರೀಕ್ಷೆಗಳು ಮತ್ತು ಮುಖ್ಯ ಪರೀಕ್ಷೆಗಳ ಎಲ್ಲಾ ವಿಷಯಗಳ ಪಠ್ಯ ಕ್ರಮವನ್ನು (ಸಿಲಬಸ್) ಅನುಬಂಧ – 1 ರಿಂದ 4 ರವರೆಗಿನಂತೆ ನಿಗಧಿಪಡಿಸಲಾಗಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆದೇಶಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ

ಹೆಚ್.ಸಿ. ರಾಜೇಂದ್ರಕುಮಾರ್

ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿ (ಸೇವೆಗಳು)

ಅರಣ್ಯ ಪರಿಸರ ಮತ್ತು ಜೀವಿಶಾಸ್ತ್ರ ಇಲಾಖೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 128 ಅಪಸೇ 2015, ದಿನಾಂಕ: 10–09–2015 ರ

ಅನುಬಂಧ –1

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಪೂರ್ವಭಾವಿ ಪರೀಕ್ಷೆಯ ಪಠ್ಯ ಕ್ರಮ

I. GENERAL KNOWLEDGE (ಅಂಕಗಳು–100, ಅವಧಿ 2.00ಗಂಟೆ)

Preliminary Exam – two hours duration, 100 marks

The question paper would be of hundred multiple choice questions divided into six sections:

1. Current events - 30 marks
2. History of India – 20 marks
3. Indian and World geography – 15 marks
4. Indian polity – 10 marks
5. Indian Economy – 10 marks
6. General Science – 15 marks

Scope and coverage

* **Current events:** Significant national and international events, personalities (both Indian and International) in news, including sports events and personalities.

* **History of India**: Ancient, medieval and recent history including the Indian national movement, its social, economic and political aspects including the nature and character of the 19th century resurgence, growth of nationalism and attainment of independence.

* **Geography:** The earth, its shape and size, latitudes and longitudes, ocean currents and tides, atmosphere and its composition including physical, social and economic geography of India its climate, vegetation, natural resources, location and distribution of agricultural and industrial activities.

* **Indian Polity**: The country's political system and Constitution of India, covering broadly its frame work, main features, different organs of Government and their functioning, at the Centre, State and local levels including Panchayath Raj institutions, fundamental rights, fundamental duties and directive principles of state policy, functioning of Indian democracy and elections.

* **Indian Economy**: Economic developments in India, basic foundation of the economy, features and sectors of Indian economy, process of planning and five year plans, markets and State controls, process of liberalization and globalization, inflation, poverty and unemployment.

* **General Science**: General appreciation and understanding of science including matters of every day observation and experience, as may be expected of a well educated person who may not have made a special study of any particular scientific discipline.

II. APTITUDE TEST (ಅಂಕಗಳು –100, ಅವಧಿ 2.00 ಗಂಟೆ)

Preliminary Exam – two hours, 100 marks

The aptitude test shall measure the candidate's comprehension, memory, reasoning, speed, analysis, evaluation of facts, data, events and judgment. The question paper would be of hundred multiple choice questions divided into six sections:

1. Numerical ability – 30 marks
2. Verbal and non-verbal ability – 15 marks
3. Logical and analytical reasoning – 20 marks
4. Statistics – 15 marks
5. Science aptitude – 20 marks

Scope and coverage

* **Numerical ability**

  Candidates would be tested on their understanding of basic arithmetic and speed of calculation, number systems, averages, percentages, profit and loss, simple and compound interest, sequences, indices, ratio and proportion, partnership, time and work, speed and distance, algebra, trigonometry, heights and distances, mensuration, geometry.

* **Verbal and non–verbal ability**

  Letters and words as symbols, analysis of relationship between groups of letters or words, completing series or order of letters or word analogy, finding odd man out, coding and decoding based on illustrated principles. Shapes and patterns, arranging shapes or designs into associated groups and finding out odd man and completing the sequence.

* **Logical and analytical reasoning**

  Application of logic and making judgments in given situations.

  General reasoning and determination of the validity of an inference from a statement, based on some given parameters.

* **Statistics**

Elementary statistics such as mean, median, mode, making deductions from pie and bar charts, graphs, figures and tables.

* **Science aptitude**

Fundamentals of physics, chemistry, botany, zoology, environment and their application in day to day life.

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Under Secretary of Government, (Services)

Forest, Environment and Ecology Department

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 128 ಅಪಸೇ 2015, ದಿನಾಂಕ: 10–09–2015 ರ

ಅನುಬಂಧ –2

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಮುಖ್ಯ ಪರೀಕ್ಷೆಯ ಕಡ್ಡಾಯ ಕನ್ನಡ ಪರೀಕ್ಷೆಯ ಪಠ್ಯ ಕ್ರಮ (ಅಂಕಗಳು – 100, ಅವಧಿ 2.00 ಗಂಟೆ)

I.ಕನ್ನಡ

ಭಾಗ–I

ಲೇಖನ ಬರೆಯುವುದು

ಯಾವುದಾದರೂ ಒಂದು ಪ್ರಸಕ್ತ ವಿಷಯವನ್ನು ಕುರಿತು 250–300 ಪದಗಳ ಲೇಖನವನ್ನು ಕನ್ನಡದಲ್ಲಿ ಬರೆಯುವುದು (ಉದಾ: ಇಂದಿನ ಸಮಾಜದಲ್ಲಿ ಮಹಿಳೆಯ ಪಾತ್ರ /ಸಬಲೀಕರಣ; ಪ್ರಕೃತಿ / ಪರಿಸರ ಸಂರಕ್ಷಣೆಯಲ್ಲಿ ಸಮಾಜದ ಪಾತ್ರ ; ಭಾರತೀಯ ಬಾಹ್ಯಾಕಾಶ ಸಂಶೋಧನೆ ; ಕೇಂದ್ರ–ರಾಜ್ಯಗಳ ನಡುವಣ ಸಂಬಂಧ; ಸಾಮಾಜಿಕ ಪಿಡುಗುಗಳು; ಸರ್ವಧರ್ಮ ಸಮನ್ವಯ; ಭಾರತದಲ್ಲಿ ಪ್ರಜಾಪ್ರಭುತ್ವ ; ರಾಷ್ಟ್ರ ಪ್ರಗತಿಯಲ್ಲಿ ಯುವಜನರ ಪಾತ್ರ; ನಮ್ಮ ಮೂಲಭೂತ ಹಕ್ಕುಗಳು; ಇಂದಿನ ಶಿಕ್ಷಣ ಪದ್ಧತಿ; ಬುದ್ಧ ಮತ್ತು ಗಾಂಧಿ; ಅಂಬೇಡ್ಕರ್; ಸಂಪ್ರದಾಯಗಳು; ಜಾಗತೀಕರಣದ ಪರಿಣಾಮಗಳು; ಭಯೋತ್ಪಾದಕತೆ ಮತ್ತು ಸರ್ಕಾರಗಳು; ಸಮೂಹ ಮಾಧ್ಯಮಗಳು; ವಿಶ್ವಸಂಸ್ಥೆ; ದೂರದರ್ಶನ; ಕೃತಕ ಮಳೆ; ಮಹಿಳಾ ಮೀಸಲಾತಿ; ಅಣುಬಾಂಬು; ಪುಸ್ತಕೋದ್ಯಮ; ಖಾಸಗೀಕರಣ; ಕನ್ನಡದ ಸ್ಥಿತಿಗತಿ; ಇತ್ಯಾದಿ).

ಭಾಗ–**II**

ಪದಗಳನ್ನು ನೀಡಿ ಅವುಗಳನ್ನು ಬಿಡಿಸಿ ಸಂಧಿಯನ್ನು ಹೆಸರಿಸುವಂತೆ ಕೇಳುವುದು;

ವಾಕ್ಯ ಪರಿವರ್ತನೆ; ನಿಶ್ಚಯ ಸೂಚಕ–ಭಾವಸೂಚಕ; ಪ್ರಶ್ನಾರ್ಥಕವಾಗಿ ಪರಿವರ್ತಿಸುವಂತೆ ಕೇಳುವುದು; ಪ್ರಶ್ನಾರ್ಥಕ – ಹೇಳಿಕೆಯಾಗಿ ಪರಿವರ್ತನೆ; ವಾಕ್ಯಗಳ ದೋಷಗಳ – ನಿವಾರಣೆ; ಸ್ವರ–ವ್ಯಂಜನದೋಷ; ಅಲ್ಪಪ್ರಾಣ–ಮಹಾಪ್ರಾಣ ವಚನಗಳ ಬಗೆಗಿನ ದೋಷಗಳು; ಪದಗಳ ಸ್ಥಾನಪಲ್ಲಟ ವಾಕ್ಯದೋಷ; ಪದಗಳ ಬಳಕೆಯೊಡನೆ ವಾಕ್ಯರಚನೆ (ಉದಾ: ಸುಧಾರಿಸು, ಕಳವಳ, ನಿರಂತರ) ಲೇಖ ಚಿಹ್ನೆಗಳು: ಪೂರ್ಣವಿರಾಮ/ ಅರ್ಧವಿರಾಮ/ ಪ್ರಶ್ನಾರ್ಥಕ/ ಭಾವಸೂಚಕ/ಉದ್ಧರಣ ಚಿಹ್ನೆ.

ಭಾಗ– III

ಅರ್ಥಗ್ರಹಣ ಪರೀಕ್ಷೆ

ಗದ್ಯ : ಪದ್ಯ ಭಾಗ ನೀಡಿ (ಅಪೇಕ್ಷೆ– ಸರಿಯಾದ ಉತ್ತರ. ಉತ್ತಮ ಭಾಷೆ: ಶೈಲಿ)

ಭಾಗ–IV

ಸಂಕ್ಷೇಪಣ ಲೇಖನ (Précis Writing)

ಮೂಲವನ್ನು ಅರ್ಥ ಕೆಡದಂತೆ ಅದರ ಮೂರನೆಯ ಒಂದರಷ್ಟಕ್ಕೆ ಸಂಕ್ಷೇಪಿಸುವುದು, ಸೂಕ್ತ ಶೀರ್ಷಿಕೆ ನೀಡುವುದು.

ಭಾಗ–V

ಶಬ್ದ ಭಂಡಾರ ಪರೀಕ್ಷೆ (Vocabulary)

ಸಮಾನಾರ್ಥಕ (ಉದಾ: ಅಂಗನೆ–ಹೆಣ್ಣು, ಸ್ತ್ರಿ, ಅಂಚು–ಕೊನೆ) ವಿರುದ್ಧಾರ್ಥಕ ಪದಗಳು (ಉದಾ: ಅಂಕುಶ–ನಿರಂಕುಶ, ಅತಂಕ–ನಿರಾತಂಕ)

ಭಾಗ–VI

ನುಡಿಗಟ್ಟುಗಳು ಮತ್ತು ಪಡೆನುಡಿಗಳು (Idioms and Phrases)

ಕೆಲವು ನುಡಿಗಟ್ಟುಗಳನ್ನು ನೀಡಿ ವಾಕ್ಯರಚನೆ ಮಾಡುವುದು.

ಭಾಗ–VII

ಗಾದೆಗಳ ಅರ್ಥ ವಿವರಣೆ : 15–20 ಅಂಕಿಗಳಲ್ಲಿ

ನೀಡಿರುವ ಲೋಕಪ್ರಿಯ ಗಾದೆಗಳಿಗೆ ಅರ್ಥವನ್ನು ಸರಳ ಭಾಷೆಯಲ್ಲಿ ವಿವರಿಸುವುದು.

ಭಾಗ–VIII

ಪತ್ರಲೇಖನ ಕೌಶಲ (Communication skill)

ಅಭ್ಯರ್ಥಿಯು ಒಂದು ಪತ್ರವನ್ನು ಬರೆಯಬೇಕು (ಸರ್ಕಾರಿ/ಖಾಸಗಿ ಉದ್ಯಮ ಸೇವೆಯಲ್ಲಿ ಇದ್ದು ಸ್ವಂತ ಕಾರ್ಯಕ್ಕಾಗಿ ಮೇಲಾಧಿಕಾರಿಗಳಿಂದ ರಜೆ ಬೇಡುವುದು ಅಥವಾ ಸ್ನೇಹಿತನಿಗೆ ಅವನು ಸಾರ್ವಜನಿಕವಾಗಿ ಪರೀಕ್ಷೆಯಲ್ಲಿ ತೇರ್ಗಡೆ ಹೊಂದಿರುವುದಕ್ಕೆ ಶುಭಾಷಯ ವಂದಿಸುತ್ತಾ ಪತ್ರ ಬರೆಯುವುದು ಅಥವಾ ಸ್ನೇಹಿತನಿಗೆ ಅವರ ಬಂಧುವಿನ ದೇಹಾಂತ್ಯ ಹೊಂದಿರುವುದಕ್ಕೆ ಶೋಕ ಹಾಗೂ ಸಹಾನುಭೂತಿ ಹೇಳುತ್ತಾ ಇತ್ಯಾದಿ)

ಭಾಗ–**IX**

ಭಾಷಾಂತರ (Translation)

ಇಂಗ್ಲೀಷಿನಿಂದ ಕನ್ನಡಕ್ಕೆ ಭಾಷಾಂತರ (ಇಂಗ್ಲೀಷಿನಲ್ಲಿ ಕೊಟ್ಟಿರುವ ಒಂದು ಲೇಖನವನ್ನು ಕನ್ನಡಕ್ಕೆ ಭಾಷಾಂತರಿಸುವುದು)

ಭಾಗ–**X**

ಕನ್ನಡ ನಾಡು : ನುಡಿಗಳ ಬಗ್ಗೆ ಸಂಕ್ಷಿಪ್ತ ಜ್ಞಾನ ಅಪೇಕ್ಷಣೀಯ

ಸಾಹಿತ್ಯ, ಸಂಸ್ಕೃತಿ, ಕಲೆ, ವಾಸ್ತು ಶಿಲ್ಪ ಚಲನಚಿತ್ರ ಮೊದಲಾದ ಕ್ಷೇತ್ರಗಳಲ್ಲಿ ಸಾಧನೆಯ ಹೆಗ್ಗುರುತುಗಳ ಜ್ಞಾನ ಪರೀಕ್ಷೆ ಇದಾಗಬೇಕು. ಕನ್ನಡ/ಕರ್ನಾಟಕ ಪ್ರಥಮಗಳ ಬಗ್ಗೆ ಜ್ಞಾನ ಅಪೇಕ್ಷಣೀಯ, ಈ ಕುರಿತು ಬಹು ಆಯ್ಕೆ ಪ್ರಶ್ನೆ (**Multiple choice**) ಗಳನ್ನು ಕೇಳುವುದು.

ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಮಾದರಿ:

ಈ ಪರೀಕ್ಷೆಗೆ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ ಸಿದ್ಧಪಡಿಸುವಾಗ ಅಭ್ಯರ್ಥಿಗಳ ಕನ್ನಡಜ್ಞಾನ ಪರೀಕ್ಷಿಸುವುದೇ ಮುಖ್ಯ ಗುರಿಯಾಗಬೇಕು. ಎಲ್ಲಾ ಪರೀಕ್ಷಾರ್ಥಿಗಳೂ ಕನ್ನಡ ವ್ಯಾಸಂಗ ಮಾಡಿರಲೇಬೇಕಾದ ಅಗತ್ಯತೆ ಇಲ್ಲದಿರುವುದರಿಂದ ವ್ಯಾವಹಾರಿಕ ಜ್ಞಾನಕ್ಕೆ ಅಗತ್ಯ ನೀಡುವುದು ಅಪೇಕ್ಷಣೀಯ.

ಭಾಗ ಅ: ಬಹು ಆಯ್ಕೆ ಪ್ರಶ್ನೆಗಳು

1. ಕನ್ನಡ ನಾಡು / ನುಡಿಗಳ ಬಗ್ಗೆ ಸಂಕ್ಷಿಪ್ತಜ್ಞಾನ	–10 ಅಂಕಗಳು
2. ಗಾದೆಗಳ ಅರ್ಥ ವಿವರಣೆ	–10 ಅಂಕಗಳು
3. ಶಬ್ದ ಭಂಡಾರ ಪರೀಕ್ಷೆ	–15 ಅಂಕಗಳು

ಭಾಗ ಆ: ವಿವರಣಾತ್ಮಕ ಪ್ರಶ್ನೆಗಳು

1. ಲೇಖನ ಬರೆಯುವುದು	–15 ಅಂಕಗಳು
2. ಪದಗಳನ್ನು ನೀಡಿ ಅವುಗಳನ್ನು ಬಿಡಿಸಿ ಸಂಧಿಯನ್ನು ಹೆಸರಿಸುವುದು	–10 ಅಂಕಗಳು
3. ಸಂಕ್ಷೇಪಣ ಲೇಖನ	–15 ಅಂಕಗಳು
4. ನುಡಿಗಟ್ಟುಗಳು ಹಾಗೂ ಪಡೆನುಡಿಗಳು	–15 ಅಂಕಗಳು
5. ಪತ್ರ ಲೇಖನ ಕೌಶಲ್ಯ	–15 ಅಂಕಗಳು
6. ಅರ್ಥಗ್ರಹಣ ಪರೀಕ್ಷೆ	–5 ಅಂಕಗಳು

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಮುಖ್ಯ ಪರೀಕ್ಷೆಯ ಕಡ್ಡಾಯ ಇಂಗ್ಲೀಷ್ ಪರೀಕ್ಷೆಯ ಪಠ್ಯ ಕ್ರಮ
(ಅಂಕಗಳು – 100, ಅವಧಿ 2.00 ಗಂಟೆ)

II. English

Section-1

Comprehension

From a given passage (prose or poem) comprehend and identify the central theme and answer questions based thereon. The candidate would not be asked to evaluate or assess the argument, its tone or style.

Section-2

Use of verbs, articles and prepositions

Use of verbs, articles and prepositions in different contexts.Construction of sentences. Detecting Common mistakes in the usage of verbs, articles and prepositions.

Section-3

Vocabulary

Knowledge of words, phrases and idiomatic expressions in common English usage to describe different activities, situations and contexts. Differentiate between the usage and meaning of words having similar vocalization (example: flora/fauna; efficiency/efficacy/ effectiveness; price/prize; affect/effect; etiquette/attitude etc.) and defect the commonly committed mistakes. Construction of sentences.

Section-4

Letter writing

Writing letters on following themes:

a) seeking leave of absence from duty to attend to a personal work from the employer / official superior

b) writing a letter to the editor of a leading newspaper or magazine expressing candidate's views on a topic of general or local importance

c) writing a letter of condolence to a friend or a colleague on the demise of a close relative or friend

d) writing a letter congratulating a friend on his promotion or election to an office of prestige or influence or on his passing a public exam or on a happy event like wedding or birth in the friend's family

e) writing a letter to a close friend or family member informing him or her about the candidate's travel to an exciting place and witnessing an unusual event

Section-5

Précis writing

Read and understand a given passage**,** sifting the essential from the non-essential information and prepare a cohesive summary not exceeding 1/3rd the size of the given passage and give a suitable eye catching title.

Section-6

Essay writing

Write an essay of 250 to 300 words on a matter of topical interest (political, economic, religious,Cultural, environmental, social, socio-economic etc.)

Pattern of the question paper

Part- A: Objective type

Fill in the blanks, choosing the correct answer from a multiple choice or giving one sentence/word answer, stating true or false – twenty five questions for one mark each – 25 marks

Part- B: Descriptive type

Comprehension – 5 marks

Vocabulary – 5 marks

Letter writing – 15 marks

Précis writing – 25 marks

Essay writing – 25 marks

H C Rajendrakumar

Under Secretary of Government, (Services)

Forest, Environment and Ecology Department

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 128 ಅಪಸೇ 2015 ದಿನಾಂಕ: 10–09–2015 ರ

ಅನುಬಂಧ –3

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಮುಖ್ಯ ಪರೀಕ್ಷೆಯ ಐಚ್ಛಿಕ ವಿಷಯ ಅರಣ್ಯ ಪತ್ರಿಕೆ – 1 ರ ಪಠ್ಯಕ್ರಮ (ಅಂಕಗಳು – 100, ಅವಧಿ – 3 ಗಂಟೆ)

FORESTRY

PAPER-I

3 Hours – 100 marks

Section A (10 Marks)

1. Silviculture - General :General Silvicultural Principles : ecological and physiological factors influencing vegetation, natural and artificial regeneration of forests; methods of propagation, grafting techniques; site factors; nursery and planting techniques-nursery beds, polybasic and maintenance, water budgeting, grading and hardening of seedlings; special approaches; establishment and tending.

2. Silviculture - systems :

Clear felling, uniform shelter wood selection, coppice and conversion systems. Management of silviculture systems of temperate, subtropical, humid tropical, dry tropical and coastal tropical forests with special reference to plantation silviculture choice of species, establishment and management of standards, enrichment methods, technical constraints, intensive mechanized methods, aerial seeding thinning.

3. Silviculture - Mangrove and Cold desert :Mangrove : habitat and characteristics,

mangrove, plantation-establishment and rehabilitation of degraded mangrove formations ; silvicultural systems for mangrove; protection of habitats against natural disasters.

Cold desert - Characteristics, identification and management of species.

4. Silviculture of trees :

Traditional and recent advances in tropical silvicultural research and practices. Silviculture of some of the economically important species in India such as Acacia catechu, Acacia nilotica, Acacia auriculiformis, Albizzialebbeck, Albizziaprocera, Anthocephalus Cadamba, Anogeissus

latifolia, Azadirachtaindica, Bamboo spp,Buteamonosperma, Cassia siamea,Casuarinaequisetifolia, Cedrusdeodara,Chukrasiatabularis, Dalbergiasisoo,Dipterocarpus spp., Emblicaofficindils,Eucalyptus spp, GmelinaArborea,Hardwickiabinata, LargerstroemiaLanceolata, Pinusroxburghi, Populusspp, Pterocarpusmarsupium, Prosopisjuliflora, Santalum album, Semecarpusanacardium,. Shorearobusta, Salmaliamalabaricum, Tectonagrandis, Terminalistomemtosa, Tamarindusindica.

Section B (15 Marks)

1. **Agro forestry, Social Forestry, Joint Forest Management and Tribology :**

Agro forestry - scope and necessity; role in the life of people and domestic animals and in integrated land use, planning especially related to (i) soil and water conservation;(ii) water recharge; (iii) nutrient availability to crops; (iv) nature and ecosystem preservation including ecological lances through pest-predator relationships and (v) providing opportunities for enhancing bio-diversity, medicinal and other flora and fauna. Agro forestry systems under different agro-ecological zones; selection of species and role of multipurpose trees and NTFPs, techniques, food, fodder and fuel security. Research and Extension needs.

Social/Urban Forestry :objectives, scope and necessity; peoples participation.

JFM - principles, objectives, methodology, scope, benefits and role of NGOs.

Tribology - tribal scene in India; tribes, concept of races, principles of social grouping, stages of tribal economy, education, cultural tradition, customs, ethos and participation in forestry programmers.

2. Forest Soils, Soil Conservation and Watershed management :Forests Soils: (10 Marks) classification, factors affecting soil formation; physical, chemical and biological properties.

Soil conservation - definition, causes for erosion; types - wind and water erosion; conservation and management of eroded soils/areas, wind breaks, shelter belts; sand dunes; reclamation of saline and alkaline soils, water logged and other waste lands. Role of forests in conserving soils. Maintenance and build up of soil organic matter, provision of lopping for green leaf maturing; forest leaf litter and composting; Role of microorganisms in ameliorating soils; N and C cycles, VAM.

Watershed Management - concepts of watershed; role of mini-forests and forest trees in overall resource management, forest hydrology, watershed develop mention respect of torrent control, river channel stabilization, avalanche and landslide controls, rehabilitation of degraded areas;

hilly and mountain areas; watershed management and environmental functions of forests; water-harvesting and conservation; ground water recharge and watershed management; role of integrating forest trees, horticultural crops, field crops, grass and fodders.

3. Environmental Conservation and Biodiversity: (10 Marks)

Environment; components and importance, principles of conservation, impact of deforestation; forest fires and various human activities like mining, construction and developmental projects, population growth on environment.

Pollution - types, global warming, greenhouse effects, ozone layer depletion, acid rain, impact and control measures, environmental monitoring; concept of sustainable development. Role of trees and forests in environmental conservation; control and prevention of air, water and noise pollution. Environmental policy and legislation in India. Environmental Impact Assessment. Economics assessment of watershed development vis -a-vis ecological and environmental protection.

4. Tree Improvement and Seed Technology: (7 Marks)

General concept of tree improvement, methods and techniques, variation and its use, provenance, seed source, exotics; quantitative aspects of forest tree improvement, seed production and seed

orchards, progeny tests, use of tree improvement in natural forest and stand improvement, genetic testing programming, selection and breeding for resistance to diseases, insects, and adverse environment; the genetic base, forest genetic resources and gene conservation in situ and ex-situ. Cost benefit ratio, economic evaluation.

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಮುಖ್ಯ ಪರೀಕ್ಷೆಯ ಐಚ್ಛಿಕ ವಿಷಯ ಅರಣ್ಯ ಪತ್ರಿಕೆ – 2 ರ ಪಠ್ಯಕ್ರಮ (ಅಂಕಗಳು– 100, ಅವಧಿ – 3 ಗಂಟೆ)

FORESTRY PAPER-II 3 Hours – 100 marks

Section A (8 Marks)

1. Forest Management and Management Systems :

Objective and principles; techniques; stand structure and dynamics, sustained yield relation; rotation, normal forest, growing stock; regulation of yield; management of forest plantations, commercial forests, forest cover monitoring. Approaches viz., (i) site-specific planning,(ii) strategic planning, (iii) Approval, sanction and expenditure, (iv) Monitoring (v)Reporting and governance. Details of steps involved such as formation of Village Forest Committees, Joint Forest Participatory Management.

2. Forest Working Plan : Forest planning, evaluation and monitoring tools and approaches for integrated planning; multipurpose development of forest resources and forest industries development; working plans and working schemes, their role in nature conservation, bio-diversity and other dimensions; preparation and control. Divisional Working Plans, Annual Plan of Operations.

3. Forest Menstruation and Remote Sensing:

Methods of measuring - diameter, girth, height and volume of trees; form-factor; volume estimation of stand, current annual increment; mean annual increment. Sampling methods and sample plots. Yield calculation; yield and stand tables, forest cover monitoring through remote sensing; Geographic Information Systems for management and modeling.

4. Surveying and Forest Engineering (7 Marks):

Forest surveying - different methods of surveying, maps and map reading. Basic principles of forest engineering. Building materials and construction. Roads and Bridges; General principles, objects, types, simple design and construction of timber bridges.

Section B

1. Forest Ecology and Ethno botany: Forest ecology (10 Marks) - Biotic and a boitic components, forest eco-systems; forest community concepts; vegetation concepts, ecological succession and climax, primary productivity, nutrient cycling and water relations; physiology in stress environments(drought, water logging salinity and alkalinity). Forest types in India, identification of species, composition and associations; dendrology, taxonomic classification, principles and establishment of herbaria and arboreta. Conservation of forest ecosystems. Clonal parks, Role of **Ethno botany** in Indian Systems of Medicine; Ayurveda and Unani -Introduction, nomenclature, habitat, distribution and botanical features of medicinal and aromatic plants. Factors affecting action and toxicity of drug plants and their chemical constituents.

2. Forest Resources and Utilization: (8 Marks)

Environmentally sound forest harvesting practices; logging and extraction techniques and principles, transportation system, storage and sale; Non-Timber Forest Products (NTFPs) definition and scope; gums, resins, oleoresins, fibers, oil seed snuts, rubber, canes, bamboos, medicinal plants, charcoal, lace and shellac, Katha and Bidi leaves, collection; processing and disposal. Need and importance of wood seasoning and preservation; general principles of seasoning, air and kiln seasoning, solar dehumidification, steam heated and electrical kilns. Composite wood; adhesives manufacture, properties, uses, plywood manufacture-properties, uses, fiberboards-manufacture properties, uses; particle boards manufacture; properties uses. Present status of composite wood industry in India in future expansion plans. Pulp-paper and rayon; present position of supply of raw material to industry, wood substitution, utilization of plantation wood; problems and possibilities. Anatomical structure of wood, defects and abnormalities of wood, timber identification- general principles.

3. Forest Protection & Wildlife Biology: (8 Marks): Injuries to forest – a biotic and biotic, destructive agencies, insect-pests and disease, effects of air pollution on forests and forest die back. Susceptibility of forests to damage, nature of damage, cause, prevention, protective measures and benefits due to chemical and biological control. General forest protection against fire, equipment and methods, controlled use of fire, economic and environmental costs; timber salvage operation softer natural disasters. Role of a forestation and forest regeneration in absorption of CO_2. Rotational and controlled grazing, different methods of control against grazing and browsing animals; effect of wild animals on forest regeneration, human impacts; encroachment, poaching, grazing, live fencing, theft, shifting cultivation and control.

4. Forest Economics and Legislation: (7 Marks)

Forest economics: fundamental principles, cost-benefit analyses; estimation of demand and supply; analysis of trends in the national and international market and changes in production and consumption patterns; assessment and projection of market structures; role of private sector and co-operatives; role of corporate financing. Socio-economic analyses of forest productivity and attitudes; valuation of forest goods and service. Legislation-History of forest development; Indian Forest Policy of 1894, 1952 and1990. National Forest Policy, 1988 of People's involvement, Joint Forest Management, Involvement of women; Forestry Policies and issues related to land use, timber and non-timber products, sustainable forest management; industrialization policies; institutional and structural changes. Decentralization and Forestry Public Administration. Forest laws, necessity; general principles, Indian Forest Act 1927; Forest Conservation Act,1980; Wildlife Protection Act 1972 and their amendments; Application of Indian Penal Code to Forestry. Scope and objectives of Forest Inventory

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಅಪಜೀ 128 ಅಪಸೇ 2015 ದಿನಾಂಕ: 10–09–2015 ರ

ಅನುಬಂಧ –4

ಸಹಾಯಕ ಅರಣ್ಯ ಸಂರಕ್ಷಣಾಧಿಕಾರಿ ಹುದ್ದೆಗಳನ್ನು ನೇರ ನೇಮಕಾತಿಯಿಂದ ತುಂಬುವುದಕ್ಕೆ ಮುಖ್ಯ ಪರೀಕ್ಷೆಯ ಐಚ್ಛಿಕ ವಿಷಯಗಳ ಇತರೆ ಪತ್ರಿಕೆಗಳ ಪಠ್ಯಕ್ರಮ (ಪ್ರತಿ ವಿಷಯಕ್ಕೆ ಅಂಕಗಳು– 100, ಅವಧಿ – 3 ಗಂಟೆ)

AGRICULTURE

SECTION-A Total: 100 Marks – 3 hours

- Ecology and its relevance to man, natural resources, their sustainable management and conservation. Physical and social environment as factors of crop distribution and production. Climatic elements as factors of crop growth, impact of changing environment on cropping pattern as indicators of environments. Environmental pollution and associated hazards to crops, animals, and humans. **10 Marks**
- Cropping pattern in different agro-climatic zones of the country. Impact of high-yielding and short-duration varieties on shifts in cropping pattern. Concepts of multiple cropping, multistory, relay and intercropping, and their importance in relation to food production. Package of practices for production of important cereals, pulses, oil seeds, fibers, sugar commercial and fodder crops grown during Kharif and Rabi seasons in different regions of the country. Important features, scope and propagation of various types of forestry plantations such as extension, social forestry, agro-forestry, and natural forests. 8 marks.

- Weeds, their characteristics, dissemination and association with various crops their multiplication; cultural, biological and chemical control of weeds. Soil-physical, chemical and biological properties. Processes and factors of soil formation. Modern classification of Indian soils, Mineral and organic constituents of soils and their role in maintaining soil productivity. Essential plant nutrients and other beneficial elements in soils and plants. Principles of soil fertility and its evaluation for judicious fertilizer use, integrated nutrient management. Losses of nitrogen in soil, nitrogen-use efficiency in submerged rice soils nitrogen fixation in soils. Fixation of phosphorus and potassium in soils and the scope for their efficient use. Problem soils and their reclamation methods. **7 marks.**
- Soil conservation planning on watershed basis. Erosion and run-off management in hilly, foot hills, and valley lands; processes and factors affecting them. Dry land agriculture and its problems. Technology of stabilizing agriculture production in rain fed agriculture area.

  10 marks.
- Water-use efficiency in relation to crop production, criteria for scheduling irrigations, ways and means of reducing run-of flosses of irrigation water. Drip and sprinkler irrigation. Drainage of water-logged soils, quality of irrigation water, effect of industrial effluents on soil and water pollution. **7 marks.**
- Farm management, scope, important and characteristics, farm planning. Optimum resources use and budgeting. Economics of different types of farming systems.5 marks.
- Marketing and pricing of agricultural inputs and outputs, price fluctuations and their cost; role of co-operatives in agricultural economy; types and systems of farming and factors affecting them. 5 marks.
- Agricultural extension, its importance and role, methods of evaluation of extension programmers, socio-economic survey and status of big, small, and marginal farmers and landless agricultural laborers; farm mechanization and its role in agricultural production and rural employment. Training programmers for extension workers; lab-to-land programmers.

  8 marks.

SECTION-B

- Cell Theory, cell structure, cell organelles and their function, cell division, nucleic acids-structure and function, gene structure and function. Laws of heredity, the irsignificance in plant breeding. Chromosome structure, chromosomal aberrations, linkage and cross-over, and their significance in recombination breeding. Polyploidy, euploid and aneuploids. Mutation-micro and macro-and their role in crop improvement. Variation, components of variation. Heritability, sterility and incompatibility, classification and their application in crop improvement. Cytoplasmic inheritance, sex-linked, sexinfluencedand sex-limited characters.

  10 marks.
- History of plant breeding. Modes of reproduction, selfing and crossing techniques. Origin and evolution of crop plants, centre of origin, law of homologous series, crop genetic resources-conservation and utilization. Application of principles of plant breeding to the improvement of major field crops. Pure-line selection, pedigree, mass and recurrent selections, combining ability, its significance in plant breeding. Hybrid vigor and its exploitation, backcross method of breeding, breeding for disease and pest resistance, role of interspecificand intergeneric hybridization. Role of biotechnology in plant breeding. Improved varieties, hybrids, composites of various crop plants 15 marks.
- Seed technology, its importance. Different kinds of seeds and their seed production and processing techniques. Role of public and private sectors in seed production, processing and marketing in India. 8 marks
- Physiology and its significance in agriculture. Imbibition, surface tension, diffusion and osmosis. Absorption and translocation of water, transpiration and water economy. Enzymes and plant pigments; photosynthesis-modern concepts and factors affecting the process, aerobic andnonaerobic respiration; C, C and CAM mechanisms. Carbohydrate, protein and fat metabolism. **10 marks.**
- Growth and development; photoperiodism and vernalization. Auxins, hormones, and other plant regulators and their mechanism of action and importance in agriculture. Physiology of seed development and germination; dormancy. 15 marks.
- Climatic requirements and cultivation of major fruits, plants, vegetable crops and flower plants; the package of practices and their scientific basis. Handling and marketing problems of fruit and vegetables. Principal methods of preservation of important fruits and vegetable products, processing techniques and equipment. Role of fruits and vegetables in human nutrition. Raising of ornamental plants, and design and layout of lawns and gardens. **10 marks**
- Diseases and pests of field vegetables, orchard and plantation crops of India. Causes and classification of plant pests and diseases. Principles of control of plant pests and diseases Biological control of pests and diseases. Integrated pest and disease management. Epidemiology and forecasting. Pesticides, their formulations and modes of action. Compatibility with rhizoidal inoculants. Microbial toxins. **10 marks.**
- Storage pests and diseases of cereals and pulses, and their control. **7 marks.**
- Food production and consumption trends in India. National and international food policies. Production, procurement, distribution and processing constraints. Relation of food production to national dietary pattern, major deficiencies of calorie and protein. **10 Marks**

BOTANY

SECTION-A 3 HOURS – 100 MARKS.

1. Microbiology and Plant Pathology:

Viruses, bacteria, and plasmids-structure and reproduction. General account of infection, Photo immunology. Applications of microbiology in agriculture, industry, medicine and pollution control in air, soil and water. Important plant diseases caused by viruses, bacteria, mycoplasma, fungi and nematodes. Mode of infection and dissemination. Molecular basis of infection and disease resistance/defense. Physiology of parasitism and control measures. Fungal toxins. **10 marks**

2. Cryptogams: Algae, Fungi, Bryophytes, Pteridophytes - structure and reproduction from evolutionary viewpoint. Distribution of Cryptogams in India and their economic potential. **5 marks.**

3. Phanerogams: Gymnosperms: Concept of Progymonosperms. Classification and distribution of Gymnosperms. Salient features of Cycad ales, Coniferrals and Gentiles, their structures and reproduction. General account of Cycadofilicales, Bennett tales and Cordaitales.. **5 marks.**

Angiosperms: Systematic, anatomy ,embryology, palynology and phylogeny. Comparative account of various systems of Angiosperm Classification. Study of angiospermic families-Magnoliaceae, Ranunculaceae, Brassicaceae (Cruciferae), Rosaceae, Leguminosae, Euphorbiaceae, Malvaceaie, Dipterocarpaceae, Apiaceae (Umbelliferae), Asclepiadaceae, Verbenaceae, Solanaceae, Rubiaceae, Cucurbitaceae, Asteraceae (Composite), Poaceae (Gramineae), Arecaceae (Palmae), Liliaceae, Musaceae, Orchidaceae. Stomata and their types. Anomalous secondary growth, Anatomy of C 3 and C 4plants.Development of male and female gametophytes, pollination, fertilization. Endosperm-its development and function. Patterns of embryo development. Polyembryony, apoxmix, Applications ofpalynology. **10 marks.**

4. Plant Utility and Exploitation:

Origin of cultivated plants, Vavilov'scentres of origin. Plants as sources for food, fodder, fibers, spices, beverages, drugs, narcotics, insecticides, timber, gums, resins and dyes. Latex, cellulose Starch and their products. Perfumery. Importance of Ethno botany in Indian context. Energy plantation. Botanical Gardens and Herbaria.

6 marks.

5. Morphogenesis: Totipotency, polarity, symmetry and differentiation. Cell, tissue, organ and protoplast culture. Somatic hybrids and Hybrids. **4 marks**

SECTION-B

1. Cell Biology: Techniques of Cell Biology. Prokaryotic and eukaryotic cells -structural and ultra structural details. Structure and function of extra cellular matrix or ECM (cell wall) and membrane scelladhesion, membrane transport and vesicular transport. Structure and function of cell organelles (chloroplasts, mitochondria, ER, ribosome's, embosoms, lissome, paroxysms, hydrogen some). Nucleus, nucleolus, nuclear pore complex. Chromatin and nucleoside. Cellsignalling and cell receptors. Signal transduction(G-1 proteins, etc.). Mitosis and meisdosis; molecular basis of cell cycle. Numerical and structural variations in chromosomes and their significance. Study of polytene, lamp brush and B-chromosomes- structure, behavior and significance. **10 marks**

2. Genetics, Molecular Biology and Evolution: Development of genetics, and gene versus allele concepts (Pseudo alleles). Quantitative genetics and multiple factors. Linkage and crossing over-methods of gene mapping including molecular maps (idea of mapping function).Sex chromosomes and sex linked inheritance, sex determination and molecular basis of sex differentiation. Mutation (biochemical and molecular basis). Cytoplasmic inheritance and cytoplasmicgenes (including genetics of male sterility). Prisons and prion hypothesis. Structure and synthesis of nucleic acids and portions. Genetic code and regulation of gene expression. Multigene families. Organic evolution-evidences, mechanism and theories. Role of RNA in origin and evolution. **15 marks**

3. Plant Breeding, Biotechnology and Biostatistics: Methods of plant breeding introduction, selection and hybridization(pedigree, backcross, mass selection, bulk method). Male sterility and heterosisbreeding. Use of apomixis in plant breeding. Micro propagation and genetic engineering-methods of transfer of genes and transgenic crops; development and use of molecular markers in plant breeding.Standard deviation and coefficient of variation(CV).Tests of significance (Z-test, ttestand chi-square tests).Probability and distributions (normal, binomial and Poisson distributions).Correlation and regression.

15 marks

4. Physiology and Biochemistry: Water relations, Mineral nutrition and ion transport, mineral deficiencies. Photosynthesis-photochemical reactions, photophosphorylation and carbon pathwaysincluding C pathway (photorespiration),C, C and CAM pathways. Respiration (anaerobic and aerobic,including fermentation-electron transport chain and oxidative phosphorylation. Chemiosmotic theory and ATP synthesis.Nitrogen fixation and nitrogen metabolism.Enzymes, coenzymes, energy transferand energy conservation. Importance of secondary metabolites. Pigments as photoreceptors (plastidial pigments and phytochrome). Photoperiodism and flowering, vernalization, senescence. Growth substances-their chemical nature, roleand applications in agri-horticulture,growth indices, growth movements. Stress physiology (heat, water, salinity, metal). Fruit and seed physiology. Dormancy, storage and germination of seed. Fruit ripening -- its molecular basis and manipulation. **10 marks**

5. Ecology and Plant Geography:

Ecological factors. Concepts and dynamics of community. Plant succession. Concepts of biosphere.Ecosystems and their conservation. Pollution and its control (including phytoremediation).Forest types of India -- afforestation,deforestation and social forestry. Endangered plants, endemism and Red Data Books. Biodiversity. Convention of Biological Diversity, Sovereign Rights and Intellectual Property Rights. Biogeochemical cycles. Global warming. **10 marks**

CHEMISTRY

SECTION-A 3 Hours – 100 marks

1. Atomic structure

Quantum theory, Heisenberg's uncertainty principle, Schrödinger wave equation (time independent).Interpretation of wave function, particle in one-dimensional box, quantum numbers, hydrogen atom wave functions. Shapes of s, p and d orbital's. 7 marks

2 Chemical bonding

Ionic bond, characteristics of ionic compounds, factors affecting stability of ionic compounds, lattice energy, Born-Haber cycle; covalent bond and its general characteristics, polarities of bonds in molecules and their dipole moments. Valence bond theory, concept of resonance and resonance energy. Molecular orbital theory (LCAO method); bonding in homonuclear molecules: H2+, H2 to Ne2, NO, CO, HF,CN, CN-, BeH2 and CO2. Comparison of valence bond and molecular orbital theories, bond order, bond strength and bond length. **8 marks**

3. SOLID STATE

Forms of solids, law of constancy of interfacial angles, crystal systems and crystal classes (crystallographic groups). Designation of crystal faces, lattice structures and unit cell. Laws of rational indices. Bragg's law. X-ray diffraction by crystals. Close packing, radios ratio rules, calculation of some limiting radius ratio values. Structures of NaCl, ZnS, CsCl, CaF2, CdI2 and retile. Imperfections in crystals, stoichiometric and nonstoichiometric defects, impurity defects, semi-conductors. Elementary study of liquid crystals..**5 marks.**

4. The gaseous state

Equation of state for real gases, intermolecular interactions, liquefaction of gases and critical phenomena, Maxwell's distribution of speeds, intermolecular collisions, collisions on the wall and effusion. .**5 marks.**

5. Thermodynamics and statistical thermodynamics

Thermodynamic systems, states and processes, work, heat and internal energy; first law of thermodynamics, work done on the systems and heat absorbed in different types of processes; calorimetric, energy and enthalpy changes in various processes and their temperature dependence. Second law of thermodynamics; entropy as a state function, entropy changes in various process, entropy-reversibility and irreversibility, Free energy functions; criteria for equilibrium, relation between equilibrium constant and thermodynamic quantities; Nernst heat theorem and third law of thermodynamics. Micro and macro states; canonical ensemble and canonical partition function; electronic, rotational and vibration partition functions and thermodynamic quantities; chemical equilibrium in ideal gas reactions.. **6 marks.**

6. Phase equilibrium and solutions

Phase equilibrium in pure substances; Clausius - Clapeyron equation; phase diagram for a pure substance; phase equilibrium in binary systems, partially miscible liquids-upper and lower critical solution temperatures; partial molar quantities, their significance and determination; excess thermodynamic functions and their determination.

6 marks

7. Electrochemistry

Debye-Hackle theory of strong electrolytes and Debye-Hackle limiting Law for various equilibrium and transport properties. Galvanic cells, concentration cells; electrochemical series, measurement of e.m.f. of cells and its applications fuel cells and batteries. Processes at electrodes; double layer at the interface; rate of charge transfer, current density; over potential; electro analytical techniques-voltametry, paleography, amperometry, cyclic-voltametry, ion selective electrodes and their use.

6 marks

8. Chemical kinetics

Concentration dependence of rate of reaction; deferential and integral rate equations for zeroth, first, second and fractional order reactions. Rate equations involving reverse, parallel, consecutive and chain reactions; effect of temperature and pressure on rate constant. Study of fast reactions by stop-flow and relaxation methods. Collisions and transition state theories.

11 marks.

9. Photochemistry

Absorption of light; decay of excited state by different routes; photochemical reactions between hydrogen and halogens and their quantum yields. **4 marks**

10. Surface phenomena and catalysis

Adsorption from gages and solutions on solid adsorbents, adsorption isotherms Langmuir and B.E.T. isotherms; determination of surface area, characteristics and mechanism of reaction on heterogeneous catalysts.

4 marks

11. Bio-inorganic chemistry

Metal ions in biological systems and their role in ion-transport across the membranes(molecular mechanism), ionospheres, photosynthesis-PSI, PSII; nitrogen fixation, oxygen-uptake proteins, cytochromes and ferredoxins. **7 marks**

12. Coordination chemistry: (8 Marks)

(a) Electronic configurations; introduction to theories of bonding in transition metal complexes. Valence bond theory, crystal field theory and its modifications; applications of theories in the explanation of magnetism and electronic spectra of metal complexes.

(b) Isomerism in coordination compounds. IUPAC nomenclature of coordination compounds; stereochemistry of complexes with 4 and 6 coordination numbers; chelae effect and polynuclear complexes; trans effect and its theories; kinetics of substitution reactions in square-planer complexes; thermodynamic and kinetic stability of complexes.

(c) Synthesis and structures of metal carbonyls; carboxyl ate anions, carbonyl hydrides and metal nitrosyl compounds.

(d) Complexes with aromatic systems, synthesis, structure and bonding in metal olefin complexes, alkynes complexes and cyclopentadienyl complexes; coordinative unsaturation, oxidative addition reactions, insertion reactions, fluxional molecules and their characterization. Compounds with metal-metal bonds and metal atom clusters.

13. General chemistry of 'f' block elements

Lanthanides and actinides; separation, oxidation states, magnetic and spectral properties; lanthanide contraction. **5 marks**

14. Non-Aqueous Solvents

Reactions in liquid NH3, HF, SO2 and H2 SO4.Failure of solvent system concept, coordination model of non-aqueous solvents. Some highly acidic media, fluorosulphuric acid and super acids. 5 marks

SECTION-B

1. Delocalized covalent bonding: (7 marks)

Aromaticity, anti-aromaticity; anilines, azulenes, trampolines, kekulene, fulvenes, syndromes.

2 (a) Reaction mechanisms: (10 marks) General methods (both kinetic and non-kinetic) of study of mechanism or organic reactions illustrated by examples-use of isotopes, cross-over experiment, intermediate trapping, stereochemistry; energy diagrams of simple organic reactions-transition states and intermediates; energy of activation; thermodynamic control and kinetic control of reactions.

(b) Reactive intermediates : Generation, geometry, stability and reactions of carbonium and carbanium ions, carbanions, free radicals, carbenes, benzynes and niternes.

(c) Substitution reactions :SN1, SN2, SNi, SN1', SN2', SNi' and SRN1 mechanisms; neighboring group participation; electrophonic and nucleophilic reactions of aromatic compound including simple heterocyclic compounds-pyrrole, thiophene, insole.

(d) Elimination reactions: E1, E2 and E1cb mechanisms; orientation in E2 reactions- Saytzeff and Hoffmann; pyrolyticsyn elimination-acetate pyrolysis, Chugged and Cope eliminations.

(e) Addition reactions: Electrophonic addition to C=C and C=C; nucleophilic addition to C=O, C=N, conjugated olefins and carbonyls.

(f) Rearrangements: Pinacol-pinacolune, Hoffmann, Beckmann, Baeyer- Villager, Favorskii, Fries, Claisen, Cope, Stevens and Wagner-Meerwein rearrangements.

3. Per cyclic reactions: Classification and examples; Woodward-Hoffmann rules-clectrocyclic reactions, cycloaddition reactions [2+2 and 4+2] and sigmatropic shifts [1, 3; 3, 3 and 1, 5] FMO

approach. **4 marks**

4. Chemistry and mechanism of reactions

Aldol condensation (including directed aldol condensation), Claisencondensation, Deskman, Perkin, Knoevenagel, Witting, Clemmensen,Wolff-Kishner, Cannizzaro and von Richter reactions; Strobe, benzoic and acclaim condensations; Fischer indolesynthesis, Scrap synthesis, Bischler-Napieralski, Sandmeyer, Reimer-Tiemann and Reformatsky reactions.

6 marks

5. Polymeric Systems **8 marks**

(a) Physical chemistry of polymers :

Polymer solutions and their thermodynamic properties; number and weight average molecular weights of polymers. Determination of molecular weights by sedimentation, light scattering, osmotic pressure, viscosity, end group analysis methods.

(b) Preparation and properties of polymers

Organic polymers-polyethylene, polystyrene, polyvinyl chloride, Teflon, nylon, terylene, synthetic and natural rubber. Inorganic polymers-phosphonitrilic halides, borazines, silicones and silicates.

(c) Biopolymers : Basic bonding in proteins, DNA and RNA.

6. Synthetic uses of reagents: OsO4, HIO4, CrO3, Pb(OAc)4, SeO2, NBS, B2H6, Na-Liquid NH3, LiA1H4, NaBH4 n-BuLi, MCPBA. 4 marks

7. Photochemistry : Photochemical reactions of simple organic compounds, excited and ground states, singlet and triplet states, Norrish-Type I and Type II reactions. **4 marks**

8. Principles of spectroscopy and applications in structure elucidation (6 marks)

(a) Rotational spectra-diatomic molecules; isotopic substitution and rotational constants.

(b) Vibrational spectra-diatomic molecules, linear triatomic molecules, specific frequencies of functional groups in polyatomic molecules.

(c) Electronic spectra : Singlet and triplet states. N->π* and π->π* transitions; application to conjugated double bonds and conjugated carbonyls-Woodward- Fieser rules.

(d) Nuclear magnetic resonance: Isochronous and anisochronousprotons ; chemical shift and coupling constants ; Application of H1 NMR to simple organicmolecules.

(e) Mass spectra: Parent peak, base peak, daughter peak, met stable peak, fragmentation of simple organic molecules: cleavage, Mclafferty rearrangement.

(f) Electron spin resonance: Inorganic complexes and free radicals. piping.

CIVIL ENGINEERING

SECTION-A - (30 Marks) 3 Hours – 100 marks

ENGINEERING MECHANICS, STRENGTH OF MATERIALS AND STRUCTURAL ANALYSIS. ENGINEERING MECHANICS :

Units and Dimensions, SI Units, Vectors, Concept of Force, Concept of particle and rigid body. Concurrent, Non Concurrent and parallel forces in a plane, moment of force and Varignon's theorem, free body diagram, conditions of equilibrium, Principle of virtual work, equivalent force system. First and Second Moment of area, Mass moment of Inertia. Static Friction, Inclined Plane and bearings. Kinematics and Kinetics : Kinematics in Cartesian and Polar Coordinates, motion under uni Form and nonuni Form acceleration, motion under gravity. Kinetics of particle : Momentum and Energy principles, D' Alembert's Principle, Collision of elastic bodies, rotation of rigid bodies, simple harmonic motion, Flywheel.

STRENGTH OF MATERIALS:

Simple Stress and Strain, Elastic constants, axially loaded compression members, Shear force and bending moment, theory of simple bending, Shear Stress distribution across cross sections, Beams of uni Form strength, Leaf spring. Strain Energy in direct stress, bending & shear. Deflection of beams: Macaulay’s method, Mohr's Moment area method, Conjugate beam method, unit load method. Torsion of Shafts, Transmission of power, close coiled helical springs, Elastic stability of columns, Euler's Rankin’s and Secant formulae. Principal Stresses and Strains in two dimensions, Mohr's Circle, Theories of Elastic Failure, Thin and Thick cylinder : Stresses due to internal and external pressure-Lame's equations.

STRUCTURAL ANALYSIS:

Castiglione’s theorems I and II, unit load method, method of consistent deformation applied to beams and pin jointed trusses. Slope-deflection, moment distribution, Kani's method of analysis and column Analogy method applied to indeterminate beams and rigid frames. Rolling loads and Influences lines : Influences lines for Shear Force and Bending moment at a section of a beam. Criteria for maximum shear force and bending Moment in beams traversed by a system of moving loads. Influences lines for simply supported plane pin jointed trusses. Arches : Three hinged, two hinged and fixed arches, rib shortening and temperature effects, influence lines in arches. Matrix methods of analysis : Force method and displacement method of analysis of indeterminate beams and rigid frames. Plastic Analysis of beams and frames :Theory of plastic bending, plastic analysis, statical method, Mechanism method. Unsymmetrical bending : Moment of inertia, product of inertia, position of Neutral Axis and Principle axes, calculation of bending stresses.

SECTION-B (30 Marks)

DESIGN OF STRUCTURES : STEEL, CONCRETE AND MASONRY STRUCTURES.

STRUCTURAL STEEL DESIGN.

Structural Steel: Factors of safety and load factors. Riveted, bolted and welded joints and connections. Design of tension and compression members, beams of built up section, riveted and welded plate girders, gantry girders, stanchions with battens and lacings, slab and gusseted

column bases. Design of highway and railway bridges : Through and deck type plate girder, Warren girder, Pratt truss.

DESIGN OF CONCRETE AND MASONRY STRUCTURES:

Concept of mix design. Reinforced Concrete : Working Stress and Limit State method of design-Recommendations of I.S. codes design of one way and two way slabs, stair-case slabs, simple and continuous beams of rectangular, T and L sections. Compression members

under direct load with or without eccentricity, Isolated and combined footings. Cantilever and Counter fort type retaining walls. Water tanks : Design requirements for Rectangular and circular tanks resting on

ground. Prestressedconcrete : Methods and systems of prestressing, anchorages, Analysis and design of sections for flexure based on working stress, loss of prestress. Design of brick masonry as per I.S.Codes Design of masonry retaining walls.

Part-C (30 Marks)

FLUID MECHANICS, OPEN CHANNEL FLOW AND HYDRAULIC MACHINES

Fluid Mechanics: Fluid properties and their role in fluid motion, fluid statics including forces acting on plane and curve surfaces. Kinematics and Dynamics of Fluid flow :Velocity and accelerations, stream lines, equation of continuity, irrigational and rotational flow, velocity potential and stream functions, flow net, methods of drawing flow net, sources and sinks, flow separation, free and forced vortices. Control volume equation, continuity, momentum, energy and moment of momentum equations from control volume equation, Navies-Stokes equation, Euler's equation of motion, application to fluid flow problems, pipe flow, plane, curved, stationary and moving vanes, sluice gates, weirs, orifice meters and Venturi meters.

Dimensional Analysis and Similitude:

Buckingham's Pi-theorem, dimensionless parameters, similitude theory, model laws, undistorted and distorted models.

Laminar Flow: Laminar flow between parallel, stationary and moving plates, flow through tube.

Boundary layer : Laminar and turbulent boundary layer on a flat plate, laminar sub layer, smooth and rough boundaries, drag and lift. Turbulent flow through pipes :Characteristics of turbulent flow, velocity distribution and variation of pipe friction factor, hydraulic grade line and total energy line, siphons, expansion and contractions in pipes, pipe networks, water hammer in pipes and surge tanks.

Open channel flow: Uni Form and nonuni Form flows, momentum and energy correction factors, specific energy and specific force, critical depth, resistance equations and variation of roughness coefficient, rapidly varied flow, flow in contractions, flow at sudden drop, hydraulic jump and its applications surges and waves, gradually varied flow, classification of surface profiles, control section, step method of integration of varied flow equation, moving surges and hydraulic bore.

HYDRAULIC MACHINES ANDHYDROPOWER:

Centrifugal pumps-Types, characteristics, Net Positive Suction Height (NPSH), specific speed. Pumps in parallel. Reciprocating pumps, Air vessels, Hydraulic ram, efficiency parameters, Rotary and positive displacement pumps, diaphragm and jet pumps. Hydraulic turbines, types classification, Choice of turbines, performance parameters, controls, characteristics, specific speed. Principles of hydropower development. Type, layouts and Component works. Surge tanks, types and choice. Flow duration curves and dependable flow. Storageanpondage. Pumped storage plants. Special features of mini, micro-hydelplants.

Part-D (30 Marks)

GEO TECHNICAL ENGINEERING

Types of soil, phase relationships, consistencylimits particles size distribution, classifications of soil, structure and clay mineralogy. Capillary water and structural water, effective stress and pour water pressure, Darcy's Law, factors affecting permeability, determination of permeability, permeability of stratified soil deposits. Seepage pressure, quick sand condition, compressibility and consolidation, Terzaghi's theory of one dimensional consolidation, consolidation test. Compaction of soil, field control of compaction. Total stress and effective stress parameters, pore pressure coefficients. Shear strength of soils, Mohr Coulomb failure theory, Shear tests. Earth pressure at rest, active and passive pressures, Rankin’s theory, Coulomb’s wedge theory, earth pressure on retaining wall, sheet pile walls, Braced excavation. Bearing capacity, Terzaghi and other important theories, net and gross bearingpressure. Immediate and consolidation settlement.

Stability of slope, Total Stress and Effective Stress methods, Conventional methods of slices, stability number. Subsurface exploration, methods of boring, sampling, penetration tests, pressure meter tests. Essential features of foundation, types of foundation, design criteria, choice of type of foundation, stress distribution in soils, Boussinessq's theory, New Marks’s chart, pressure bulb, contact pressure, applicability of different bearing capacity theories, evaluation of bearing capacity from field-tests, allowable bearing capacity,Settlement analysis, allowable settlement. Proportioning of footing, isolated and combined footings, rafts, buoyancy rafts, Pile foundation, types of piles, pile capacity, static and dynamic analysis, design of pile groups, pile load test, settlement of piles, lateral capacity. Foundation for Bridges. Ground improvement techniques-preloading, sand drains, stone column, grouting, soilstabilisation.

Part-E (30 marks)

CONSTRUCTION TECHNOLOGY,EQUIPMENT, PLANNING ANDMANAGEMENT

1. Construction Technology :

Engineering Materials :Physical properties of construction materials :Stones, Bricks and Tiles; Lime, Cement and Surkhi Mortars; Lime Concrete and Cement Concrete, Properties of freshly

mixed and hardened concrete, Flooring Tiles, use of fibrocement, fibre-reinforcedand polymer concrete, high strength concrete and light weight concrete. Timber :Properties and uses; defects in timber; seasoning and preservation of timber. Plastics, rubber and damp-proofing materials, termite proofing, Materials, for Low-cost housing.

Construction :

Building components and their functions; Brick masonry : Bonds, jointing. Stonemasonry. Design of Brick masonry walls as per I.S. codes, factors of safety, serviceability and strength requirements; plastering, pointing. Types of Floors & Roofs. Ventilators, Repairs in buildings.

Functional planning of building : Building orientation, circulation, grouping of areas, privacy concept and design of energy efficient building; provisions of National Building Code. Building estimates and specifications ; Cost of works; valuation.

2. Construction Equipment:

Standard and special types of equipment, Preventive maintenance and repair, factors affecting the selection of equipment, economical life, time and motion study, capital and maintenance cost.

Concreting equipments : Weigh batcher, mixer, vibration, batching plant, Concrete pump. **Earth-work equipment :**Power shovel hoe, bulldozer, dumper, trailers, and tractors, rollers, sheep foot roller.

3. Construction Planning and Management : Construction activity, schedules, job layout, bar charts, organization of contracting firms, project control and supervision. Cost reduction measures.

New-work analysis: CPM and PERT analysis, Float Times, cashing of activities, contraction of network for cost optimization, updating, Cost analysis and resource allocation. Elements of Engineering Economics, methods of appraisal, present worth, annual cost, benefit-cost, incremental analysis. Economy of scale and size. Choosing between alternatives including levels of investments. Project profitability.

Part-F (30 marks)

SURVEY AND TRANSPORTATION ENGINEERING

Survey: Common methods of distance and angle measurements, plane table survey, leveling traverse survey, triangulation survey, corrections, and adjustments, contouring, topographical map. Surveying instruments for above purposes. Tachometry. Circular and transition curves. Principles of photogrammetric.

Railways: Permanent way, sleepers, rail fastenings, ballast, points and crossings, design of turn outs, stations and yards, turntables, signals, and interlocking, levelcrossing. Construction and maintenance of permanent ways :Super elevation, creep of rail, ruling gradient, track resistance, tractive effort, relaying of track.

Highway Engineering: Principles of highway planning, Highway alignments. Geometrical design : Cross section, camber, super elevation, horizontal and vertical curves. Classification of roads : low cost roads, flexible pavements, rigid pavements. Design of pavements and their construction, evaluation of pavement failure and strengthening. Drainage of roads : Surface and sub-surface drainage.

Traffic Engineering: Forecasting techniques,origin and destination survey, highway capacity. Channelisedandunchannelised intersections, rotary design elements, markings, sign, signals, street lighting; Traffic surveys. Principle of highway financing.

Part-G (30 Marks)

HYDROLOGY, WATER RESOURCESAND ENGINEERING

Hydrology: Hydrological cycle, precipitation, evaporation, transpiration, depression storage, infiltration, overland flow, hydrograph, flood frequency analysis, flood estimation, flood routing through a reservoir, channel flow routing-Muskingum method.

Ground water flow: Specific yield, storage coefficient, coefficient of permeability, confined and unconfined aquifers, aquitards, radial flow into a well under confined and unconfined conditions, tube wells, pumping and recuperation tests, ground water potential.

WATER RESOURCES ENGINEERING :

Ground and surface water resource, single and multipurpose projects, storage capacity of reservoirs, reservoir losses, reservoir sedimentation, economics of water resources projects.

IRRIGATION ENGINEERING: Water requirements of crops : consumptive use, quality of water for irrigation, duty and delta, irrigation methods and their efficiencies. Canals : Distribution systems for canal irrigation, canal capacity, canal losses, alignment of main and distributory canals, most efficient section, lined canals, their design, regime theory, critical shear stress, bed load, local and suspended load transport, cost analysis of lined and unlined canals, drainage behind lining. Water logging : causes and control, drainage system design, salinity. Canal structures :Design of cross regulators, head regulators, canal falls, aqueducts, metering flumes and canal outlets. Diversion head work : Principles and design of weirs of permeable and impermeable foundation, Kholo's theory, energy dissipation, stilling basin, sedimentexcluders. Storage works : Types of dams, design,principles of rigid gravity and earth dams, stability analysis, foundation treatment, joints and galleries, control of seepage. Spillways Spillway types, crest gates, energy dissipation. River training : Objectives of river training, methods of river training.

Part-H (30 marks)

ENVIRONMENTAL ENGINEERING

Water Supply: Estimation of surface and subsurface water resources, predicting demand for water, impurities, of water and their significance, physical, chemical and bacteriological analysis, waterborne diseases, standards for potable water.

Intake of water: pumping and gravity schemes. Water treatment : principles of coagulation, flocculation and sedimentation; slow-; rapid, pressure-, filters; chlorination, softening, removal of taste, dour and salinity.

Water storage and distribution: storage and balancing reservoirs : types, location and capacity. Distribution system: layout, hydraulics of pipe lines, pipe fittings, valves including check and pressure reducing valves, meters, analysis of distribution systems, leak detection, maintenance of distribution systems, pumping stations and their operations.

Sewage systems: Domestic and industrial wastes, storm sewage-separate and combined systems, flow through sewers, design of sewers, sewer appurtenances, manholes, inlets, junctions, siphon. Plumbing in public buildings.

Sewage characterisation: BOD, COD, solids, dissolved oxygen, nitrogen and TOC. Standards of disposal in normal water course and on land.

Sewage treatment: Working principles, units, chambers, sedimentation tanks, trickling filters, oxidation ponds, activated sludge process, septic tank, disposal of sludge, recycling of waste water.

Solid waste: collection and disposal in rural and urban contexts, management of long-term ill-effects.

Environmental pollution: Sustainable development. Radioactive wastes and disposal. Environmental impact assessment for thermal power plants, mines, river valley projects. Air pollution. Pollution control acts.

MATHMATICS

Section-A **3 Hours -100 Marks**

Linear Algebra

Vector, space, linear dependence and independence, subspaces, bases, dimensions. Finite dimensional vector spaces. Matrices, Cayley - Hamilton theorem, eigenvalues and eigenvectors, matrix of linear transformation, row and column reduction, Echelon form, equivalence, congruence's and similarity, reduction to canonical form, rank, orthogonal, symmetrical,skew symmetrical, unitary, hermitian,skew-hermitian forms their eigenvalues. Orthogonal and unitary reduction of quadratic and hermitian forms, positive definite quardratic forms. **10 marks**

Calculus

Real numbers, limits, continuity, differerentiability, mean-value theorems, Taylor's theorem with remainders, indeterminate forms, maxims and minima, asymptotes. Functions of several variables: continuity, differentiability, partial derivatives, maxima and minima, Lagrange's method of multipliers, Jacobean. Riemann's definition of definite integrals, indefinite integrals, infinite and improper integrals, beta and gamma functions. Double and triple integrals (evaluation techniques only).Areas, surface and volumes, centre of gravity. **10 marks**

Analytic Geometry:

Cartesian and polar coordinates in two and three dimensions, second degree equations in two and three dimensions, reduction to canonical forms, straight lines, shortest distance between two skew lines, plane, sphere, cone, cylinder., parabolic, ellipsoid, hyperboloid of one and two sheets and their properties. **10 marks**

Section-B

Ordinary Differential Equations:

Formulation of differential equations, order and degree, equations of first order and first degree, integrating factor, equations of first order but not of first degree, Clariaut's equation, singular solution. Higher order linear equations, with constant coefficients, complementary function and particular integral, general solution, Euler-Cauchy equation. Second order linear equations with variable coefficients, determination of complete solution when one solution is known, method of variation of parameters. **10 marks**

Dynamics, Statics and Hydrostatics:

Degree of freedom and constraints, rectilinear motion, simple harmonic motion, motion in a plane, projectiles, constrained motion, work and energy, conservation of energy, motion under impulsive forces, Kepler's laws, orbits under central forces, motion of varying mass, motion under resistance. Equilibrium of a system of particles, work and potential energy, friction, common centenary, principle of virtual work, stability of equilibrium, equilibrium of forces in three dimensions. Pressure of heavy fluids, equilibrium of fluids under given system of forces Bernoulli's equation, centre of pressure, thrust on curved surfaces, equilibrium of floating bodies, stability of equilibrium, met centre, pressure of gases. **10 marks**

Vector Analysis :

Scalar and vector fields, triple, products, differentiation of vector function of a scalar variable, Gradient, divergence and curl in Cartesian, cylindrical and spherical coordinates and their physical interpretations. Higher order derivatives, vector identities and vector equations. Application to Geometry: Curves in space, curvature and torsion. Secret - Ferret's formulae, Gauss and Stokes' theorems, Green's identities. **5 marks**

Section-B

Algebra:

Groups, subgroups, normal subgroups, homomorphism of groups quotient groups basic isomorphism theorems, Solow's group, permutation groups, Cayley theorem. Rings and ideals, principal ideal domains, unique factorization domains and Euclidean domains. Field extensions, finite fields. **5 marks**

Real Analysis:

Real number system, ordered sets, bounds, ordered field, real number system as an ordered field with least upper bound property, Cauchy sequence, completeness, Continuity and uniform continuity of functions, properties of continuous functions on compact sets. Riemann integral, improper integrals, absolute and conditional convergence of series of real and complex terms, rearrangement of series. Uniform convergence, continuity, differentiability and inerrability for sequences and series of functions. Differentiation of factions of several variables, change in the order of partial derivatives, implicit function theorem, maxima and minima. Multiple integrals. **10 marks**

Complex Analysis : Analytic function, Cauchy-Riemann equations, Cauchy's theorem, Cauchy's integral formula, power series, Taylor's series, Laurent's Series, Singularities, Cauchy's residue theorem, contour integration. Conformal mapping, bilinear transformations. **5 marks**

Linear Programming:

Linear programming problems, basic solution, basic feasible solution and optimal solution, graphical method andSimplex method of solutions. Duality. Transportation and assignment problems. Travelling salesman problems. **5 marks**

Section-C

Partial differential equations:

Curves and surfaces in three dimensions, formulation of partial differential equations, solutions of equations of type dx/p=dy/q=dz/r; orthogonal trajectories, pfaffian differential equations; partial differential equations of the first order, solution by Cauchy's method of characteristics; Charpit'smethod of solutions, linear partial differential equations of the second order with constant coefficients, equations of vibrating string, heat equation, laplaceequation. **5 marks**

Numerical Analysis and Computer programming:

Numerical methods: Solution of algebraic and transcendental equations of one variable by bisection, Regula - Falsiand Newton- Rap son methods, solution of system of linear equations by Gaussian elimination and Gauss-Jordan (direct)methods, Gauss-Seidel(iterative) method. Newton's (Forward and backward) and Lagrange's method of interpolation. Numerical integration: Simpson's onethirdrule, trapezoidal rule, Gaussianquardrature formula. Numerical solution of ordinary differential equations: Euler and Rungekutta - methods. Computer Programming: Storage of numbers in Computers, bits, bytes and words, binary system. arithmetic and logical operations on numbers. Bitwise operations. AND, OR , XOR, NOT, and shift/rotate operators. Octal and Hexadecimal Systems. Conversion to and Form decimal Systems. Representation of unsigned integers, signed integers and reels, double precisionreals and long integers. Algorithms and flow charts for solving numerical analysis problems. Developing simple programs in Basic for problems involving techniques covered in the numerical analysis.

10 marks

Mechanics and Fluid Dynamics:

Generalized coordinates, constraints, homonymic and non-homonymic, systems. D' Alembert's principle and Lagrange 'equations, Hamilton equations, moment of intertie, motion of rigid bodies in twodimensions. Equation of continuity, Euler's equation of motion for in viscid flow, stream-lines, pathof a particle, potential flow, two-dimensional and axis metric motion, sources and sinks, vortex motion, flow past a cylinder and a sphere, method of images. Navier-Stokes equation for a viscous fluid.

5 marks

Physics

Section-A **3 Hours -100 Marks**

1. Classical Mechanics

(a) Particle dynamics:

Centre of mass and laboratory coordinates, conservation of linear and angular momentum. The rocket equation. Rutherford scattering, Galilean transformation, inertial and non-inertial frames, rotating frames, centrifugal and Carioles forces, Foucault pendulum. **3 marks**

(b) System of particles:

Constraints, degrees of freedom, generalized coordinates and moment. Lagrange's equation and applications to linear harmonic oscillator, simple pendulum and central force problems. Cyclic coordinates, Hamiltonian Lagrange's equation from Hamilton's principle. **3 marks**

(c) Rigid body dynamics:

Eulerian angles, inertia tensor, principal moments of inertia. Euler's equation of motion of a rigid body, force-free motion of a rigid body. Gyroscope. **4 marks**

2. Special Relativity, Waves & Geometrical Optics

(a) Special Relativity:

Michelson-Morley experiment and its implications. Lorentz transformations length contraction, time dilation, addition of velocities, aberration and Doppler effect, mass-energy relation, simple applications to a decay process. Murkowski diagram, four dimensional momentum vector. Covariance of equations of physics.

4 marks

(b) Waves:

Simple harmonic motion, damped oscillation, forced oscillation and resonance. Beats.Stationary waves in a string. Pulses and wave packets. Phase and group velocities. Reflection and Refraction from Huygens' principle.

3 marks

(c) Geometrical Optics:

Laws of reflection and refraction from Fermat's principle. Matrix method in paraxial optic-thin lens formula, nodal planes, system of two thin lenses, chromatic and spherical aberrations. **3 marks**

3. Physical Optics:

(a) Interference:

Interference of light-Young's experiment, Newton's rings, interference by thin films, Michelson interferometer. Multiple beam interference and Fairy-Perot interferometer. Holography and simple applications.

3 marks

(b) Diffraction:

Fraunhofer diffraction-single slit, double slit, diffraction grating, resolving power. Fresnel diffraction: - half-period zones and zones plates. Fresnel integrals. Application of Corn's spiral to the analysis of diffraction at a straight edge and by a long narrow slit. Diffraction by a circular aperture and the Airy pattern.

3 marks

(c) Polarization and Modern Optics:

Production and detection of linearly and circularly polarized light. Double refraction, quarter wave plate. Optical activity. Principles of fiber optics attenuation; pulse dispersion in step index and parabolic index fibers; material dispersion, single mode fibers. Lasers-Einstein A and B coefficients. Ruby and He-Ne lasers. Characteristics of laser light-spatial and temporal coherence. Focusing of laser beams. Three-level scheme for laser operation. **4 marks**

Section-B

4. Electricity and Magnetism:

(a) Electrostatics and Magneto statics:

Laplace and Poisson equations in electrostatics and their applications. Energy of a system of charges, multiple expansion of scalar potential. Method of images and its applications. Potential and field due to a dipole, force and torque on a dipole in an external field. Dielectrics, polarization. Solutions to boundary-value problems-conducting and dielectric spheres in a uniform electric field. Magnetic shell, uniformly magnetized sphere. Ferromagnetic materials, hysteresis, energy loss**.** **6 marks**

(b) Current Electricity:

Kirchhoff's laws and their applications. Biot-Savart law, Ampere's law, Faraday's law, Lenz' law.Self-and mutual-inductances. Mean and rams values in AC circuits. LR CR and LCR circuits series and parallel resonance. Quality factor. Principal of transformer. **4 marks**

5. Electromagnetic Theory & Black Body Radiation:

(a) Electromagnetic Theory:

Displacement current and Maxwell's equations. Wave equations in vacuum, Pointing theorem. Vector and scalar potentials. Gauge invariance, Lorentz and Coulomb gauges. Electromagnetic field tensor, covariance of Maxwell's equations. Wave equations in isotropic dielectrics, reflection and refraction at the boundary of two dielectrics. Fresnel's relations. Normal and anomalous dispersion. Rayleigh scattering. **6 marks**

(b) Blackbody radiation:

Black body radiation ad Planck radiation law- Stefan-Boltzmann law, Wien displacement law and Rayleigh-Jeans law. Planck mass, Planck length, Planck time, Planck temperature and Planck energy.

4 marks

6. Thermal and Statistical Physics

(a) Thermodynamics:

Laws of thermodynamics, reversible and irreversible processes, entropy. Isothermal, adiabatic, isobaric, isochoric processes and entropy change. Otto and Diesel engines, Gibbs' phase rule and chemical potential.van deer Waals equation of state of a real gas, critical constants. Maxwell-Boltzmann distribution of molecular velocities, transport phenomena, equipartition and viral theorems. Dulong-Petit, Einstein, and Debye's theories of specific heat of solids. Maxwell lll relations and applications. Clausius- Clapeyron equation. Adiabatic demagnetization, Joule-Kelvin effect and liquefaction of gases. **7 marks**

(b) Statistical Physics:

Saha ionization formula. Bose-Einstein condensation. Thermodynamic behavior of an ideal Fermi gas, Chandrasekhar limit, elementary ideas about neutron stars and pulsars. Brownian motion as a random walk, diffusion process. Concept of negative temperatures. **3 marks**

Section-B

1. Quantum Mechanics I:

Wave-particle duality. Schrödinger equation and expectation values. Uncertainty principle. Solutions of the one-dimensional Schrödinger equation free particle (Gaussian wave-packet),particle in a box, particle in a finite well, linear harmonic oscillator. Reflection and transmission by a potential step and by a rectangular barrier. Use of WKB formula for the life-time calculation in the alpha-decay problem.

5 marks

2. Quantum Mechanics II & Atomic Physics:

(a) Quantum Mechanics II:

Particle in a three dimensional box, density of states, free electron theory of metals.The angular momentum problem. The hydrogen atom. The spin half problem and properties of Pauli spin matrices.

3 marks

(b) Atomic Physics:

Stern-Garlicky experiment, electron spin, fine structure of hydrogen atom. LS coupling, J-J coupling. Spectroscopic notation of atomic states. Zeeman effect. Frank-Condon principle and applications.

3 marks

3. Molecular Physics:

Elementary theory of rotational, vibratonal and electronic spectra of diatomic molecules. Raman effect and molecular structure. Laser Raman spectroscopy Importance of neutral hydrogen atom, molecular hydrogen and molecular hydrogen ion in astronomy Fluorescence and Phosphorescence. Elementary theory and applications of NMR. Elementary ideas about Lambshift and its significance. **6 marks**

Section-C

4. Nuclear Physics:

Basic nuclear properties-size, binding energy, angular momentum, parity, magnetic moment. Semi-empirical mass formula and applications. Mass parabolas. Ground state of a deuteron magnetic moment and non-central forces. Meson theory of nuclear forces. Salient features of nuclear forces. Shell model of the nucleus-success and limitations. Violation of parity in beta decay. Gamma decay and internal conversion. Elementary ideas about Mossbauerspectroscopy.Q-value of nuclear reactions. Nuclear fission and fusion, energy production in stars. Nuclear reactors. **8 marks**

5. Particle Physics & Solid StatePhysics:

(a) Particle Physics:

Classification of elementary particles and their interactions. Conservation laws. Quark structure of hadrons. Field quanta of electroweak and strong interactions. Elementary ideas about Unification of Forces. Physics of neutrinos. **5 marks**

(b) Solid State Physics:

Cubic crystal structure. Band theory of solids- conductors, insulators and semiconductors. Elements of superconductivity, Meissner effect, Josephson junctions and applications. Elementary ideas about high temperature superconductivity.

5 marks

6. Electronics :

Intrinsic and extrinsic semiconductors-n-p and n-p-n transistors. Amplifiers and oscillators.Op-amps.FET, JFET and MOSFET. Digital electronics-Boolean identities, De; Morgan's laws, Logic gates and truth tables., Simple logic circuits. Thermostats, solar cells. Fundamentals of microprocessors and digital computers. **5 marks**

ZOOLOGY

Section-A **3 Hours -100 marks**

1. Non-chordate and chordate: (10 Marks)

(a) Classification and relationship of various phyla upto sub-classes; Acoelomata and Coelomata; Protostomes and Deuterostomes, Bilateralia and Radiata; Status of Protista, Parazoa, Onychophora and Hemichordata; Symmetry.

(b) Protozoa : Locomotion, nutrition, reproduction; evolution of sex General features and life history of Paramaecium, Monocystis, Plasmodium, and Leis mania.

(c) Peripheral: Skeleton, canal system and reproduction.

(d) Coelenterate: Polymorphism, defensive structures and their mechanism; coral reefs and their formation; mutagenesis; general features and life history of Lobelia and Aurelia.

(e) Platy helminthes : Parasitic adaptation; general features and life history of Fascicle and Taenia and their relation to man.

(f) Nemathelminthes: General features, life history and parasitic adaptation of Ascaris; nemathelminthsin relation to man.

(g) Annelid : Coolum and metamerism; modes of life in polychaetes; general features and life history of nereis (Neanthes),earthworm (Pheretima) and leach(Hirudinaria).

(h) Arthropod : Larval forms and parasitism in Crustacean; vision and respiration in arthropods (prawn, cockroach and scorpion); modification of mouth parts in insects(cockroach, mosquito, housefly, honey bee and butterfly); metamorphosis in insects and its hormonal regulation; social organization in insects (termites and honey bees).

(i) Mollusk : Feeding, respiration, locomotion, shell diversify; general features and life history of

Lamellidens, Pila and Sepia, torsion and distortion in gastropods.

(j) Echinodermata : Feeding, respiration, locomotion larval forms; general features and life history of Asterias.

(k) Protochordata: Origin of chordates; general features and life history of Branchiostoma and Herdamania.

(l) Pisces: Scales, respiration, locomotion, migration.

(m) Amphibian : Origin of tetra pods; parental care, paedomorphosis.

(n) Reptilian : Origin of reptiles; skull types; status of Shandon and crocidiles.

(o) Aves : Origin of birds; flight adaptation, migration.

(p) Mammalian : Origin of mammals; dentition; general features of egglayingmammals, pouched-mammals, aquatic mammals and primates; endocrine glands and other hormone producing structures(pituitary, thyroid, parathyroid, adrenal, pancreas, gonads)and their interrelationships.

(q) Comparative functional anatomy of various systems of vertebrates (integument and its derivatives, endoskeleton, locomotors organs, digestive system, respiratory system, circulatory system including heart and aortic arches; urinogenitalsystem, brain and sense organs (eye and ear).

Section-B

1. Ecology: (10 marks)

(a) Biosphere: Biogeochemical cycles, green-houses effect, ozone layer and its impact; ecological succession, biomes and ecotones.

(b) Population, characteristics, population dynamics, population stabilization.

(c) Conservation of natural resources- mineral mining, fisheries, aquaculture; forestry; grassland; wildlife (Project Tiger); sustainable production in agriculture integratedpest management.

(d) Environmental biodegradation; pollution and its impact on biosphere and its prevention.

II. Ethnology: (7 Marks)

(a) Behavior: Sensory filtering, responsiveness, sign stimuli, learning, instinct, habituation, conditioning, imprinting.

(b) Role of hormones in drive; role of pheromones in alarm spreading; crypsis, predator detection, predator tactics, social behavior in insects and primates; courtship (Drosophila, 3 spine stickleback and birds).

(c) Orientation, navigation, homing; biological rhythms; biological clock, tidal, seasonal and circadian rhythms.

(d) Methods of studying animal behavior.

III. Economic Zoology: (8 marks)

(a) Apiculture, sericulture, lace culture, carp culture, pearl culture, prawn culture.

(b) Major infectious and communicable diseases (small pox, plague, malaria, tuberculosis, cholera and AIDS) their vectors, pathogen sand prevention.

(c) Cattle and livestock diseases, their pathogens (helminthes) and vectors (ticks, mites, Tabanus,

Stomoxys)

(d) Pests of sugar cane (Pyrillaperpusiella),oil seed (Achaea janata)and rice (Sitophilusoryzae).

IV. Biostatistics: Designing of experiments; null hypothesis; correlation, regression, distribution admeasure of central tendency, chi-square, student t-test, F-test (one way& two-way F-test). **7 marks**

V. Instrumental methods: (8 marks)

(a) Spectrophotometer, flame photometry, Geiger-Muller counter, scintillation counting.

(b) Electron microscopy (TEM, SEM).

Section-C

I. Cell Biology: (10 Marks)

(a) Structure and function of cell and its organelles(nucleus, plasma membrane, mitochondria, Golgi bodies, endoplasmic reticulum, ribosome's and lysosomes), cell division (mitosis and meiosis),mitotic spindle and mitotic apparatus, chromosome movement.

(b) Watson-Crick model of DNA, replication of DNA, protein synthesis, transcription and transcription factors.

II. Genetics

(a) Gene structure and functions; genetic code.

(b) Sex chromosomes and sex determination in Drosophila, nematodes and man.

(c) Mendel's laws of inheritance, recombination, linkage, linkage maps, multiple alleles, cistronconcept; genetics of blood groups.

(d) Mutations and mutagenesis : radiation and chemical.

(e) Cloning technology, plasmids and cosmids as vectors, transgenics,transposons, DNA sequence cloning and whole animal cloning(Principles and methodology).

(f) Regulation and gene expression in pro-and eukaryotes.

(g) Signal transduction; pedigreeanalysis; congenital diseases inman.

(h) Human genome mapping; DNA finger-printing.

III. Evolution

(a) Origin of life

(b) Natural selection, role of mutation in evolution, mimicry, variation, isolation, speciation.

(c) Fossils and fossilization; evolution of horse, elephant and man.

(d) Hardy-Weinberg Law, causes of change in gene frequency.

(e) Continental drift and distribution of animals.

IV. Systematics

(a) Zoological nomenclature; internationalcode; cladistics.

Section-B

I. Biochemistry: (10 Marks)

(a) Structure and role of carbohydrates, fats, lipids, proteins, amino acids, nucleic acids; saturated and unsaturated fatty acids, cholesterol.

(b) Glycol sis and Krebs cycle, oxidation and reduction, oxidative phosphorylation; energy conservation and release, ATP, cyclic AMP-its structure and role.

(c) Hormone classification (steroid and peptide hormones), biosynthesis and function.

(d) Enzymes: types and mechanisms of action; immunoglobulin and immunity; vitamins and coenzymes.

(e) Bioenergetics.

II Physiology (with special reference to mammals): (10 Marks)

(a) Composition and constituents of blood; blood groups and Rh factoring man; coagulation, factors and mechanism of coagulation; acid base balance, thermo regulation.

(b) Oxygen and carbon dioxide transport; hemoglobin : constituents and role in regulation.

(c) Nutritive requirements; role of salivary glands, liver, pancreas and intestinal glands in digestion and absorption.

(d) Excretory products; nephron and regulation of urine formation; osmoregulation.

(e) Types of muscles, mechanism of contraction of skeletal muscles.

(f) Neuron, nerve impulse-its conduction and synaptic transmission; neurotransmitters.

(g) Vision, hearing and olfaction in man.

(h) Mechanism of hormone action.

(I) Physiology of reproduction, role of hormones and pheromones.

III. Developmental Biology: (8 Marks)

(a) Differentiation from gamete toneurula stage; dedifferentiation; metaphase, induction, morphogenesis and morphogen; fatemaps of gastrulae in frog and chick; organogenesis of eye and heart, placenation in mammals.

(b) Role of cytoplasm in and genetic control of development; cell lineage; causation of metamorphosis in frog and insects; paedogenesia and neoteny; growth, degrowth and cell death; ageing; blast genesis; regeneration; teratogenesis;neoplasia.

(c) Invasiveness of placenta; in vitrofertilization; embryo transfer, cloning.

(d) Baer's law; evo-devo concept.

ANIMAL HUSBANDRY AND VETERINARY SCIENCE

SECTION-A **3 Hours -100 marks**

1. Animal Nutrition: (10 Marks)

1.1 Partitioning of food energy within the animal. Direct and indirect calorimetry. Carbon – nitrogen balance and comparative slaughter methods. Systems for expressing energy value of foods in ruminants, pigs and poultry. Energy requirements for maintenance, growth, pregnancy, lactation, egg, wool, and meat production.

1.2 Latest advances in protein nutrition. Energy protein interrelationships. Evaluation of protein quality. Use of NPN compounds in ruminant diets. Protein requirements for maintenance, growth, pregnancy, lactation, egg, wool and meat production.

1.3 Major and trace minerals – Their sources, physiological functions and deficiency symptoms. Toxic minerals. Mineral interactions. Role of fat-soluble and water – soluble vitamins in the body, their sources and deficiency symptoms.

1.4 Feed additives – methane inhibitors, probiotics, enzymes, antibiotics, hormones, oligosaccharides, antioxidants, emulsifiers, mould inhibitors, buffers etc. Use and abuse of growth promoters like hormones and antibiotics – latest concepts.

1.5 Conservation of fodders. Storage of feeds and feed ingredients. Recent advances in feed technology and feed processing. Anti – nutritional and toxic factors present in livestock feeds. Feed analysis and quality control. Digestibility trials – direct, indirect and indicator methods. Predicting feed intake in grazing animals.

1.6 Advances in ruminant nutrition. Nutrient requirements. Balanced rations. Feeding of calves, pregnant, work animals and breeding bulls. Strategies for feeding mulch animals during different stages of lactation cycle. Effect of feeding on milk composition. Feeding of goats for meat and milk production. Feeding of sheep for meat and wool production.

1.7 Swine Nutrition. Nutrient requirements. Creep, starter, grower and finisher rations. Feeding of pigs for lean meat production. Low cost rations for swine.

1.8 Poultry nutrition. Special features of poultry nutrition. Nutrient requirements for meat and egg production. Formulation of rations for different classes of layers and broilers.

2. Animal Physiology: (13 Marks)

2.1 Physiology of blood and its circulation, respiration; excretion. Endocrine glands in health and disease.

2.2 Blood constituents - Properties and functions-blood cell formation-Hemoglobin synthesis and chemistry plasma proteins production, classification and properties, coagulation of blood; Hemorrhagic disorders-anticoagulants-blood groups-Blood volume- Plasma expanders-Buffer systems in blood. Biochemical tests and their significance in disease diagnosis.

2.3 Circulation - Physiology of heart, cardiac cycle, heart sounds, heartbeat, electrocardiograms.

Work and efficiency of heart-effect of ions on heart function metabolism of cardiac muscle, nervous and chemical regulation of heart, effect of temperature and stress on heart, blood pressure and hypertension, osmotic regulation, arterial pulse, vasomotor regulation of circulation, shock. Coronary and pulmonary circulation, Blood-Brain barrier-Cerebrospinal fluid- circulation in birds.

2.4 Respiration - Mechanism of respiration, Transport and exchange of gases–neural control of respiration-chemoreceptor's-hypoxia-respiration in birds.

2.5 Excretion-Structure and function of kidney-formation of urine-methods of studying renal function-renal regulation of acid-base balance: physiological constituents of urine-renal failure-passive venous congestion-Urinary secretion in chicken-Sweat glands and their function. Bio-chemical test for urinary dysfunction.

2.6 Endocrine glands - Functional disorders their symptoms and diagnosis. Synthesis of hormones, mechanism and control of secretion-hormonal receptors classification and function.

2.7 Growth and Animal Production-Prenatal and postnatal growth, maturation, growth curves, measures of growth, factors affecting growth, conformation, body composition, meat quality.

2.8 Physiology of Milk Production, Reproduction and Digestion- Current status of hormonal control of mammary development, milk secretion and milk ejection, Male and Female reproductive organs, their components and functions. Digestive organs and their functions.

2.9 Environmental Physiology- Physiological relations and their regulation; mechanisms of adaptation, environmental factors and regulatory mechanisms involved in animal behavior, climatology– various parameters and their importance. Animal ecology. Physiology of behavior. Effect of stress on health and production.

3. Animal Reproduction: (8 Marks)

Semen quality- Preservation and Artificial Insemination- Components of semen, composition of spermatozoa, chemical and physical properties of ejaculated semen, factors affecting semen in vivo and in vitro. Factors affecting semen production and quality, preservation, composition of diluents, sperm concentration, transport of diluted semen. Deep freezing techniques in cows, sheep, goats, swine and poultry. Detection of oestrus and time of insemination for better conception. Anoestrus and repeat breeding.

4. Livestock Production and Management: (5 Marks)

4.1 Commercial Dairy Farming- Comparison of dairy farming in India with advanced countries. Dairying under mixed farming and as specialized farming, economic dairy farming. Starting of a dairy farm, Capital and land requirement, organization of the dairy farm. Opportunities in dairy farming, factors determining the efficiency of dairy animal. Herd recording, budgeting, cost of milk production, pricing policy; Personnel Management. Developing Practical and Economic rations for dairy cattle; supply of greens throughout the year, feed and fodder requirements of Dairy Farm.Feeding regimes for young stock and bulls, heifers and breeding animals; new trends in feeding young and adult stock; Feeding records.

4.2 Commercial meat, egg and wool production- Development of practical and economic rations for sheep, goats, pigs, rabbits and poultry. Supply of greens, fodder, feeding regimes for young and mature stock. New trends in enhancing production and management. Capital and land requirements and socio-economic concept.

4.3 Feeding and management of animals under drought, flood and other natural calamities.

5. Genetics and Animal Breeding: (12 Marks)

History of animal genetics. Mitosis and Meiosis: Mendelian inheritance; deviations to Mendelian genetics; Expression of genes; Linkage and crossing over; Sex determination, sex influenced and sex limited characters; Blood groups and polymorphism; Chromosome aberrations; Cytoplasmic inheritance. Gene and its structure; DNA as a genetic material; Genetic code and protein synthesis; Recombinant DNA technology. Mutations, types of mutations, methods for detecting mutations and mutation rate. Trans-genesis.

5.1 Population Genetics applied to Animal Breeding- Quantitative Vs. qualitative traits; Hardy Weinberg Law; Population Vs. individual; Gene and genotypic frequency; Forces changing gene frequency; Random drift and small populations; Theory of path coefficient; Inbreeding, methods of estimating inbreeding coefficient, systems of inbreeding, Effective population size; Breeding value, estimation of breeding value, dominance and epistemic deviation; Partitioning of variation; Genotype X environment correlation and genotype X environment interaction; role of multiple measurements; Resemblance between relatives.

5.2 Breeding Systems- Breeds of lives-sock and Poultry. Heritability, repeatability and genetic and phenotypic correlations, their methods of estimation and precision of estimates; Aids to selection and their relative merits; Individual, pedigree, family and within family selection; Progeny testing; Methods of selection; Construction of selection indices and their uses; Comparative evaluation of genetic gains through various selection methods; Indirect selection and correlated response; Inbreeding, out breeding, upgrading, cross-breeding and synthesis of breeds; Crossing of inbred lines for commercial production; Selection for general and specific combining ability; Breeding for threshold characters. Sire index.

6. Extension: (7 Marks)

Basic philosophy, objectives, concept and principles of extension. Different Methods adopted to educate farmers under rural conditions. Generation of technology, its transfer and feed back. Problems and constraints in transfer of technology. Animal husbandry programmers for rural development.

SECTION-B

1. Anatomy, Pharmacology and Hygiene: (10 Marks)

1.1 Histology and Histological Techniques: Paraffin embedding technique of tissue processing and H.E. staining - Freezing microtome-Microscopy- Bright field microscope and electron microscope. Cytology-structure of cell, organelles and inclusions; cell division-cell types- Tissues and their classification embryonic and adult tissues-Comparative histology of organs-Vascular. Nervous, digestive, respiratory, muscular- skeletal and urogenital systems- Endocrine glands -Integuments-sense organs.

1.2 Embryology – Embryology of vertebrates with special reference to avis and domestic mammals gametogenesis-fertilization-germ layers- fetal membranes and placenta ion-types of placenta in domestic mammals-Teratology-twins and twinning- organogenesis -germ layer derivatives- endodermis, mesoderm and ectodermic derivates.

1.3 Bovine Anatomy- Regional Anatomy:

Para nasal sinuses of OX- surface anatomy of salivary glands. Regional anatomy of infraorbital, maxillary, mandibuloalveolar, mental and corneal nerve block. Regional anatomy of par vertebral nerves, pudendal nerve, median ulnar and radial nerves-tibial, fibular and digital nerves-Cranial nerves-structures involved in epidural anesthesia-superficial lymph nodes-surface anatomy of visceral organs of thoracic, abdominal and pelvic cavities-comparative features of locomotors apparatus and their application in the biomechanics of mammalian body.

1.4 Anatomy of Fowl- Muscular-skeletal system-functional anatomy in relation to respiration and flying, digestion and egg production.

1.5 Pharmacology and therapeutic drugs - Cellular level of pharmacodynamics and pharmacokinetics. Drugs acting on fluids and electrolyte balance. Drugs acting on Autonomic nervous system. Modern concepts of anesthesia and dissociative anesthetics.

Autacoids. Antimicrobials and principles of chemotherapy in microbial infections. Use of hormones in therapeutics- chemotherapy of parasitic infections. Drug and economic concerns in the Edible tissues of animals- chemotherapy of Neoplastic diseases. Toxicity due to insecticides, plants, metals, non-metals, zootoxins and mycotoxins.

1.6 Veterinary Hygiene with reference to water, air and habitation - Assessment of pollution of water, air and soil- Importance of climate in animal health- effect of environment on animal function and performance- relationship between industrialization and animal agriculture- animal housing requirements for specific categories of domestic animals viz. pregnant cows and sows, milking cows, broiler birds stress, strain and productivity in relation to animal habitation.

2. Animal Diseases: (10 Marks)

2.1 Etiology, epidemiology pathogenesis, symptoms, postmortem lesions, diagnosis, and control of infectious diseases of cattle, sheep and goat, horses, pigs and poultry.

2.2 Etiology, epidemiology, symptoms, diagnosis, treatment of production diseases of cattle, horse, pig and poultry.

2.3 Deficiency diseases of domestic animals and birds.

2.4 Diagnosis and treatment of non-specific conditions like impaction, Bloat, Diarrhoea, Indigestion, dehydration, stroke, poisoning.

2.5 Diagnosis and treatment of neurological disorders.

2.6 Principles and methods of immunization of animals against specific diseases herd immunity- disease free zones- 'zero' disease concept- chemoprophylaxis.

2.7 Anesthesia- local, regional and general- preanesthetic medication. Symptoms and surgical interference in fractures and dislocation. Hernia, choking abdominal displacement- Caesarian operations. Rumenotomy-Castrations.

2.8 Disease investigation techniques.- Materials for laboratory investigation-Establishment of Animal Health Centers-Disease free zone.

3. Veterinary Public Health: (10 Marks)

3.1 Zoo noses. - Classification, definition, role of animals and birds in prevalence and transmission of zoometric diseases occupational zoometric diseases.

3.2 Epidemiology- Principle, definition of epidemiological terms, application of epidemiological

measures in the study of diseases and disease control. Epidemiological features of air, water and

food borne infections. OIE regulations, WTO, sanitary and phytosanitary measures.

3.3 Veterinary Jurisprudence- Rules and Regulations for improvement of animal quality and prevention of animal diseases - State and central rules for prevention of animal and animal product borne diseases- S P C A- Veterolegal cases- Certificates -Materials and Methods of

collection of samples for veterolegal investigation.

4. Milk and Milk Products Technology: (7 Marks)

4.1 Market Milk: Quality, testing and grading of raw milk. Processing, packaging, storing, distribution, marketing, defects and their control. Preparation of the following milks: Pasteurized, standardized, toned, double toned, sterilized, homogenized, reconstituted, recombined and flavored milks. Preparation of cultured milks, cultures and their management,

yoghurt, Dahi, Lassi and Srikhand. Preparation of flavored and sterilized milks. Legal standards. Sanitation requirement for clean and safe milk and for the milk plant equipment.

4.2 Milk Products Technology: Selection of raw materials, processing, storing , distributing and marketing milk products such as Cream, Butter, Ghee, Khoa, Channa, Cheese, condensed, evaporated, dried milk and baby food, Ice cream and Kulfi; by-products, whey products, butter milk, lactose and casein. Testing, grading, judging milk products- BIS and A-Mark specifications, legal standards, quality control and nutritive properties. Packaging, processing and operational control. Costing of dairy products.

5. Meat Hygiene and Technology: (8 Marks)

5.1 Meat Hygiene.

5.1.1 Ante mortem care and management of food animals, stunning, slaughter and dressing operations; abattoir requirements and designs; Meat inspection procedures and judgment of carcass meat cuts- grading of carcass meat cuts- duties and functions of Veterinarians in wholesome meat production.

5.1.2 Hygienic methods of handling production of meat- Spoilage of meat and control measures- Post – slaughter physicochemical changes in meat and factors that influence them- Quality improvement methods – Adulteration of meat and detection - Regulatory provisions in Meat trade and Industry.

5.2 Meat Technology.

5.2.1 Physical and chemical characteristics of meat- Meat emulsions- Methods of preservation of meat- Curing, canning, irradiation, packaging of meat and meat products, processing and formulations.

5.3 By- products- Slaughter house byproducts and their utilization- Edible and inedible by products- Social and economic implications of proper utilization of slaughter house by-products- Organ products for food and pharmaceuticals.

5.4 Poultry Products Technology- Chemical composition and nutritive value of poultry meat, pre - slaughter care and management. Slaughtering techniques, inspection, preservation of poultry meat and products. Legal and BIS standards. Structure, composition and nutritive value of eggs. Microbial spoilage. Preservation and maintenance. Marketing of poultry meat, eggs and products. Value added meat products.

5.5 Rabbit/Fur Animal farming – Rabbit meat production. Disposal and utilization of fur and wool and recycling of waste by products. Grading of wool

H C Rajendrakumar

Under Secretary of Government, (Services)

Forest, Environment and Ecology Department

PR. 589

SC. 100

ಸಹಕಾರ ಸಚಿವಾಲಯ

ವಿಷಯ : 2014–15 ನೇ ಸಾಲಿಗೆ ರಾಜ್ಯದ ರೈತರಿಗೆ ಪತ್ತಿನ ಸಹಕಾರಿ ಸಂಸ್ಥೆಗಳು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ವಿತರಿಸಿದ ಅಲ್ಪಾವಧಿ ಕೃಷಿ ಸಾಲಗಳಿಗೆ ಬಡ್ಡಿ ಸಹಾಯಧನ ದರ ನಿಗದಿಪಡಿಸಿ ಆದೇಶ.

ಓದಲಾಗಿದೆ:

1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಸಿಒ 206 ಸಿಎಲ್ಎಸ್ 2014, ದಿನಾಂಕ:19.08.2014
2. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಸಿಒ 172 ಸಿಎಲ್ಎಸ್ 2012, ದಿನಾಂಕ:19.08.2014
3. ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರ ಪತ್ರ ಸಂಖ್ಯೆ:ಸಿಆರ್‌ಡಿ/ ಸಿಎಬಿ–1/91/2014–15, ದಿ:30.07.2015.

ಪ್ರಸ್ತಾವನೆ:

ಮೇಲೆ(1)ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರಿ ಆದೇಶದಲ್ಲಿ ರೈತರಿಗೆ ಸಹಕಾರ ಸಂಸ್ಥೆಗಳಿಂದ ರೂ.3 ಲಕ್ಷಗಳವರೆಗಿನ ಅಲ್ಪಾವಧಿ ಕೃಷಿ ಸಾಲವನ್ನು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ನೀಡುವ ಯೋಜನೆಯನ್ನು 2014–15ನೇ ಸಾಲಿಗೆ ಜಾರಿಗೊಳಿಸಿ ಆದೇಶ ಹೊರಡಿಸಲಾಗಿರುತ್ತದೆ.

ಮೇಲೆ(2)ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರಿ ಆದೇಶದಲ್ಲಿ 2013–14 ನೇ ಸಾಲಿನಲ್ಲಿ ಸಹಕಾರ ಸಂಸ್ಥೆಗಳು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ವಿತರಿಸಿದ ಅಲ್ಪಾವಧಿ ಸಾಲಗಳ ವಸೂಲಾತಿ ಆಧಾರದ ಮೇಲೆ ಶೇ.10ರ ಬಡ್ಡಿ ಸಹಾಯಧನವನ್ನು ನಿಗದಿಪಡಿಸಿ ಆದೇಶ ಹೊರಡಿಸಲಾಗಿದೆ.

ಮೇಲೆ(3)ರಲ್ಲಿ ಓದಲಾದ ಪತ್ರದಲ್ಲಿ ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು 2014–15 ನೇ ಸಾಲಿನಲ್ಲಿ ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ವಿತರಿಸಿದ ಬೆಳೆ ಸಾಲಗಳಿಗೆ ಶೇ.7ರ ಬಡ್ಡಿ ಸಹಾಯಧನ ನಿಗದಿಪಡಿಸಲು ಮತ್ತು ಕೇಂದ್ರ ಸರ್ಕಾರದಿಂದ ಲಭ್ಯವಾಗುವ ಶೇ.3ರ ಪ್ರೋತ್ಸಾಹವನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳಲು ಹಾಗೂ ಈ ಪ್ರೋತ್ಸಾಹ ಧನದಲ್ಲಿ ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳ ಪಾಲು ಹಾಗೂ ಡಿ.ಸಿ.ಸಿ ಬ್ಯಾಂಕುಗಳ ಪಾಲನ್ನು ನಿಗದಿಪಡಿಸಲು ಕೋರಿ ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸಿರುತ್ತಾರೆ.

ಆರ್ಥಿಕ ಇಲಾಖೆಯು ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ ಎಫ್‌ಡಿ 193 ಇಎಕ್ಸ್‌ಪಿ–2/2015 , ದಿನಾಂಕ:18.06.2015 ಮತ್ತು ಎಫ್‌ಡಿ 295 ಇಎಕ್ಸ್‌ಪಿ–2/2015, ದಿನಾಂಕ:10.09.2015 ರ ಹಿಂಬರಹದಲ್ಲಿ 2014–15ನೇ ಸಾಲಿನಲ್ಲಿ ರೈತರಿಗೆ ಪತ್ತಿನ ಸಹಕಾರಿ ಸಂಸ್ಥೆಗಳು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ವಿತರಿಸಿದ ಅಲ್ಪಾವಧಿ ಕೃಷಿ ಸಾಲಗಳಿಗೆ ಕೇಂದ್ರ ಸರ್ಕಾರದಿಂದ ದೊರೆಯುವ ಶೇ.3ರ ಪ್ರೋತ್ಸಾಹಧನವನ್ನು ಅಳವಡಿಸಿಕೊಂಡು ಶೇ.7ರ ಬಡ್ಡಿ ಸಹಾಯಧನ ದರ ನಿಗದಿಪಡಿಸಲು ಮತ್ತು ಕೇಂದ್ರ ಸರ್ಕಾರದಿಂದ ಲಭ್ಯವಾಗುವ ಶೇ.3ರ ಪ್ರೋತ್ಸಾಹ ಧನದಲ್ಲಿ ಜಿಲ್ಲಾ ಕೇಂದ್ರ ಸಹಕಾರ ಬ್ಯಾಂಕ್‌ಗಳಿಗೆ ಶೇ.0.50 ಮತ್ತು ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರಿ ಸಂಘಗಳಿಗೆ ಶೇ.2.50 ಪಾಲು ನಿಗದಿಪಡಿಸಲು ಸಹಮತಿ ನೀಡಿರುತ್ತಾರೆ.

ಪ್ರಸ್ತಾವನೆಯನ್ನು ಸರ್ಕಾರವು ಪರಿಶೀಲಿಸಿ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ: ಸಿಒ 206 ಸಿಎಲ್ಎಸ್ 2014, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 18.09.2015

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ 2014–15ನೇ ಸಾಲಿನಲ್ಲಿ ರೈತರಿಗೆ ಪತ್ತಿನ ಸಹಕಾರಿ ಸಂಸ್ಥೆಗಳು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ವಿತರಿಸುವ ಅಲ್ಪಾವಧಿ ಕೃಷಿ ಸಾಲಗಳಿಗೆ ನಬಾರ್ಡ್‌ವತಿಯಿಂದ ಒದಗಿಸಲಾಗುವ ಶೇ.3 ರ ಬಡ್ಡಿ ಸಹಾಯಧನವನ್ನು ಪರಿಗಣಿಸಿ ಇದನ್ನು ಅಳವಡಿಸಿಕೊಂಡು ಶೇ.7ರ ಬಡ್ಡಿ ಸಹಾಯಧನ ನಿಗಧಿಪಡಿಸಿ ಆದೇಶಿಸಲಾಗಿದೆ.

ಕೇಂದ್ರ ಸರ್ಕಾರದಿಂದ ಲಭ್ಯವಾಗುವ ಶೇ.3ರ ಪ್ರೋತ್ಸಾಹ ಧನದಲ್ಲಿ ಜಿಲ್ಲಾ ಕೇಂದ್ರ ಸಹಕಾರ ಬ್ಯಾಂಕ್‌ಗಳಿಗೆ ಶೇ.0.50 ಮತ್ತು ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರಿ ಸಂಘಗಳಿಗೆ ಶೇ.2.50 ಪಾಲು ನಿಗದಿಪಡಿಸಿ ಆದೇಶಿಸಲಾಗಿದೆ.

ಈ ಆದೇಶವನ್ನು ಆರ್ಥಿಕ ಇಲಾಖೆಯು ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ ಎಫ್‌ಡಿ 193 ಇಎಕ್ಸ್‌ಪಿ–2/2015 , ದಿನಾಂಕ:18.06.2015 ಮತ್ತು ಎಫ್‌ಡಿ 295 ಇಎಕ್ಸ್‌ಪಿ–2/2015, ದಿನಾಂಕ:10.09.2015 ರಲ್ಲಿ ನೀಡಿರುವ ಸಹಮತಿಯ ಮೇರೆಗೆ ಹೊರಡಿಸಲಾಗಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆಜ್ಞಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಎಂ.ವೆಂಕಟಸ್ವಾಮಿ

ವಿಶೇಷ ಕರ್ತವ್ಯಾಧಿಕಾರಿ ಹಾಗೂ ಪದನಿಮಿತ್ತ

ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,

ಸಹಕಾರ ಇಲಾಖೆ.

PR. 572

SC. 25

ಸಹಕಾರ ಸಚಿವಾಲಯ

ವಿಷಯ: 2015–16ನೇ ಸಾಲಿಗೆ ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ ಯೋಜನೆಯಡಿಯಲ್ಲಿ ಅನುದಾನ ಬಿಡುಗಡೆ ಮಾಡುವ ಬಗ್ಗೆ.

ಓದಲಾಗಿದೆ:
1. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಸಇ 22 ಆಂಆಸ 2015, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:08.05.2015.
2. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ ಸಿಒ 186 ಸಿಎಲ್ಎಸ್ 2015, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:16.06.2015.
3. ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರ ಪತ್ರ ಸಂಖ್ಯೆ:ಸಿಆರ್‌ಡಿ/ ಸಿಎಬಿ–1/07/2014–15, ದಿನಾಂಕ:26.05.2015.
4. ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಎಫ್‌ಡಿ/02/ಟಿಎಫ್‌ಪಿ, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:09.04.2015.

ಪ್ರಸ್ತಾವನೆ:

ಮೇಲೆ (1) ರಲ್ಲಿ ಓದಲಾದ ಆದೇಶದಲ್ಲಿ 2015–16ನೇ ಸಾಲಿನ ಮುಂದುವರೆದ ಯೋಜನೆಯಾದ ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ ಯೋಜನೆಯನ್ನು ಲೆಕ್ಕ ಶೀರ್ಷಿಕೆ 2425–00–107–2–41 ರಡಿ ಒಟ್ಟು ರೂ.73741.00 ಲಕ್ಷಗಳ ಯೋಜನೆ ಕಾರ್ಯಕ್ರಮವನ್ನು ದಿನಾಂಕ:01.04.2015 ರಿಂದ 31.03.2016 ರವರೆಗೆ ಮುಂದುವರೆಸಲು ಸರ್ಕಾರದ ಅನುಮೋದನೆ ನೀಡಲಾಗಿದೆ.

ಮೇಲೆ (2) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರಿ ಆದೇಶದಲ್ಲಿ ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ ಯೋಜನೆಯಲ್ಲಿ ರಾಜ್ಯದ ರೈತರಿಗೆ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಸ್ಥೆಗಳು ರಿಯಾಯತಿ ಬಡ್ಡಿ ದರದಲ್ಲಿ ನೀಡಿದ ಸಾಲಗಳ ಪೈಕಿ ವಸೂಲಾಗಿರುವ ಸಾಲಗಳ ಬಡ್ಡಿಯ ವ್ಯತ್ಯಾಸದ ಬಡ್ಡಿ ಸಹಾಯಧನ ರೂ.18435.25 ಲಕ್ಷ (ಹದಿನೆಂಟು ಸಾವಿರದ ನಾಲ್ಕುನೂರಾ ಮೂವತ್ತೈದು ಲಕ್ಷ ಇಪ್ಪತ್ತೈದು ಸಾವಿರ ರೂಪಾಯಿಗಳು ಮಾತ್ರ)ಗಳನ್ನು 2015–16ನೇ ಸಾಲಿನ ಮೊದಲನೆ ತ್ರೈಮಾಸಿಕದಲ್ಲಿ ಬಿಡುಗಡೆ ಮಾಡಲಾಗಿರುತ್ತದೆ.

ಮೇಲೆ (3) ರಲ್ಲಿ ಓದಲಾದ ಪತ್ರದಲ್ಲಿ ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು 2015–16ನೇ ಸಾಲಿನ ಆಯವ್ಯಯದಲ್ಲಿ ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ ಯೋಜನೆಯನ್ನು ಲೆಕ್ಕ ಶೀರ್ಷಿಕೆ 2425–00–107–2–41 ರಡಿ ಕಲ್ಪಿಸಿರುವ ರೂ.73741.00 ಲಕ್ಷಗಳಲ್ಲಿ ರೂ.18435.25 ಲಕ್ಷಗಳ ಅನುದಾನವನ್ನು ಎರಡನೇ ಕಂತನ್ನಾಗಿ ಬಿಡುಗಡೆ ಮಾಡುವಂತೆ ಕೋರಿರುತ್ತಾರೆ. ಓದಲಾದ (2)ರ ಆದೇಶದಲ್ಲಿ ಬಿಡುಗಡೆ ಮಾಡಿದ ಮೊದಲನೇ ಕಂತಿನ ಹಣ ರೂ.18435.25 ಲಕ್ಷಗಳ ಅನುದಾನ ಸಂಪೂರ್ಣ ಖರ್ಚು ಮಾಡಲಾಗಿದೆ ಎಂದು ದೃಢೀಕೃತ ಬಳಕೆ ಪ್ರಮಾಣ ಪತ್ರ ನೀಡಿರುತ್ತಾರೆ.

ಮೇಲೆ (4) ರಲ್ಲಿ ಓದಲಾದ ಸರ್ಕಾರದ ಆದೇಶದಲ್ಲಿ ಆಯವ್ಯಯದ ಅವಕಾಶದ ಶೇ.25ರಷ್ಟು ಅನುದಾನವನ್ನು ಮೊದಲನೇ ಕಂತಿನಲ್ಲಿ ಬಿಡುಗಡೆಯಾಗಿರುವ ಮೊಬಲಗಿನ ಪೈಕಿ ಶೇ.75 ಖರ್ಚಾಗಿರುವ ಬಗ್ಗೆ ಬಳಕೆ ಪ್ರಮಾಣ ಒದಗಿಸುವ ಷರತ್ತಿಗೊಳಪಟ್ಟು ಬಿಡುಗಡೆಗೊಳಿಸಲು ಇಲಾಖೆಯ ಪ್ರಧಾನ ಕಾರ್ಯದರ್ಶಿ/ಕಾರ್ಯದರ್ಶಿಗಳಿಗೆ ವಿತ್ತಾಧಿಕಾರ ಪ್ರತ್ಯಾಯೋಜಿಸಲಾಗಿರುತ್ತದೆ.

ಸರ್ಕಾರವು ನಿಬಂಧಕರ ಪ್ರಸ್ತಾವನೆಯನ್ನು ಪರಿಗಣಿಸಿ ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶಿಸಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಸಿಒ 186 ಸಿಎಲ್ಎಸ್ 2015, ಬೆಂಗಳೂರು, ದಿನಾಂಕ:03.09.2015

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಹಿನ್ನೆಲೆಯಲ್ಲಿ ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ ಯೋಜನೆಯಲ್ಲಿ ರಾಜ್ಯದ ರೈತರಿಗೆ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಸ್ಥೆಗಳು ರಿಯಾಯತಿ ಬಡ್ಡಿ ದರದಲ್ಲಿ ನೀಡಿದ ಸಾಲಗಳ ಪೈಕಿ ವಸೂಲಾಗಿರುವ ಸಾಲಗಳ ಬಡ್ಡಿಯ ವ್ಯತ್ಯಾಸದ ಬಡ್ಡಿ ಸಹಾಯಧನ ರೂ.18435.25 ಲಕ್ಷ (ಹದಿನೆಂಟು ಸಾವಿರದ ನಾಲ್ಕುನೂರಾ ಮೂವತ್ತೈದು ಲಕ್ಷ ಇಪ್ಪತ್ತೈದು ಸಾವಿರ ರೂಪಾಯಿಗಳು ಮಾತ್ರ) ಗಳನ್ನು 2015–16ನೇ ಸಾಲಿನ ಎರಡನೇ ತ್ರೈಮಾಸಿಕದಲ್ಲಿ ಕೆಳಕಂಡಂತೆ ಬಿಡುಗಡೆ ಮಾಡಲಾಗಿದೆ:

ಯೋಜನೆ: ಬೆಳೆ ಸಾಲಕ್ಕಾಗಿ ಬಡ್ಡಿ ಸಹಾಯಧನ

ಲೆಕ್ಕಶೀರ್ಷಿಕೆ: 2425–00–107–2–41

(ರೂ.ಲಕ್ಷಗಳಲ್ಲಿ)

106–ಸಾಮಾನ್ಯ	16829.00
422–ವಿಶೇಷ ಘಟಕ ಯೋಜನೆ	847.25
423–ಗಿರಿಜನ ಉಪ ಯೋಜನೆ	759.00
ಒಟ್ಟು	18435.25

ಈ ಮೊತ್ತವನ್ನು ಸಹಕಾರ ಸಂಘಗಳ ಅಪರ ನಿಬಂಧಕರು (ಪತ್ತು), ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರ ಕಛೇರಿ, ಬೆಂಗಳೂರು ಇವರು ಹಣ ಸಂದಾಯ ರಸೀದಿ ಮೂಲಕ ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರ ಮೇಲು ಸಹಿ ಪಡೆದು ಖಜಾನೆಯಿಂದ ಪಡೆಯತಕ್ಕದ್ದು. ಖಜಾನೆಯಿಂದ ಡ್ರಾ ಮಾಡಿದ ಮೊತ್ತವನ್ನು ಕರ್ನಾಟಕ ರಾಜ್ಯ ಸಹಕಾರ ಅಪೆಕ್ಸ್ ಬ್ಯಾಂಕ್ ನಿ., ಬೆಂಗಳೂರು ಇಲ್ಲಿ ಠೇವಣಿಸಿ, ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು ಸದರಿ ಹಣವನ್ನು ಸಂಬಂಧಿಸಿದ ಬ್ಯಾಂಕುಗಳಿಗೆ ಬಿಡುಗಡೆ ಮಾಡುವುದು ಮತ್ತು ಈ ಹಣವನ್ನು ಸಂಬಂಧಿಸಿದ ಫಲಾನುಭವಿಗಳ ಖಾತೆಗೆ ಕೂಡಲೇ ಬಿಡುಗಡೆ ಮಾಡಿ, ಈ ಬಗ್ಗೆ ಬಳಕೆ ಪ್ರಮಾಣ ಪತ್ರಗಳನ್ನು ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

ಈ ಆದೇಶವನ್ನು ಆರ್ಥಿಕ ಇಲಾಖೆಯ ಆದೇಶ ಸಂಖ್ಯೆ:ಎಫ್‌ಡಿ 2 ಟಿಎಫ್‌ಪಿ 2015, ದಿನಾಂಕ:09.04.2015ರಲ್ಲಿ ಸರ್ಕಾರದ ಕಾರ್ಯದರ್ಶಿಗಳಿಗೆ ಪ್ರತ್ಯಾಯೋಜಿಸಿರುವ ಅಧಿಕಾರದನ್ವಯ ಹಾಗೂ ಆಂತರಿಕ ಆರ್ಥಿಕ ಸಲಹೆಗಾರರ ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ:ಸಇ 89 ಆಂಆಸ 2015, ದಿನಾಂಕ:25.08.2015 ರಲ್ಲಿ ನೀಡಿರುವ ಅನುಮೋದನೆ ಮೇರೆಗೆ ಹೊರಡಿಸಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆಜ್ಞಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಎಂ.ವೆಂಕಟಸ್ವಾಮಿ

ವಿಶೇಷ ಕರ್ತವ್ಯಾಧಿಕಾರಿ ಹಾಗೂ ಪದನಿಮಿತ್ತ

ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,

ಸಹಕಾರ ಇಲಾಖೆ.

PR. 590

SC. 25

ಸಹಕಾರ ಸಚಿವಾಲಯ

ವಿಷಯ: 2015–16ನೇ ಸಾಲಿಗೆ ಒಳನಾಡು ಮೀನುಗಾರಿಕೆಯಲ್ಲಿ ನೀಲಿಕ್ರಾಂತಿ ತರಲು ರಾಜ್ಯದ ಮೀನು ಕೃಷಿಕರಿಗೆ ಸಹಕಾರಿ ಬ್ಯಾಂಕುಗಳ ಮೂಲಕ ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ರೂ.1.00 ಲಕ್ಷದವರೆಗಿನ ಅಲ್ಪಾವಧಿ ಸಾಲ ವಿತರಿಸಲು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡುವ ಕುರಿತು ಆದೇಶ.

ಓದಲಾಗಿದೆ: ಪಶುಸಂಗೋಪನೆ ಮತ್ತು ಮೀನುಗಾರಿಕೆ ಇಲಾಖೆ (ಮೀನುಗಾರಿಕೆ)ಯ ಅ.ಟಿ. ಸಂಖ್ಯೆ:ಪಸನೀ 91 ಮೀಇಯೋ 2015, ದಿನಾಂಕ:08.05.2015 ಮತ್ತು ಅ.ಟಿ. ಸಂಖ್ಯೆ:ಪಸನೀ/ ಆಕಾ/211/2015, ದಿನಾಂಕ:05.05.2015.

ಪ್ರಸ್ತಾವನೆ:

2015–16ನೇ ಸಾಲಿನ ಆಯವ್ಯಯ ಭಾಷಣದಲ್ಲಿ ಒಳನಾಡು ಮೀನುಗಾರಿಕೆಯಲ್ಲಿ ನೀಲಿಕ್ರಾಂತಿ ತರಲು ರಾಜ್ಯದ ಮೀನು ಕೃಷಿಕರಿಗೆ ಮೀನುಗಾರಿಕೆ ಚಟುವಟಿಕೆಗಳಿಗೆ ಸಹಕಾರಿ ಬ್ಯಾಂಕುಗಳ ಮೂಲಕ ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ರೂ.1.00 ಲಕ್ಷದವರೆಗಿನ ಅಲ್ಪಾವಧಿ ಸಾಲ ವಿತರಿಸಲಾಗುವುದೆಂದು ಘೋಷಿಸಲಾಗಿರುತ್ತದೆ.

ಮೇಲೆ ಓದಲಾದ ಅನಧಿಕೃತ ಟಿಪ್ಪಣಿಗಳಲ್ಲಿ ಈ ಯೋಜನೆಯ ಅನುಷ್ಠಾನಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಸಹಕಾರ ಇಲಾಖೆಯಿಂದ ಆದೇಶವನ್ನು ಹೊರಡಿಸಬೇಕೆಂದು ಪ್ರಸ್ತಾವನೆ ಸಲ್ಲಿಸಲಾಗಿರುತ್ತದೆ.

ಪ್ರಸ್ತಾವನೆಯನ್ನು ಕೂಲಂಕಷವಾಗಿ ಪರಿಶೀಲಿಸಿ, ಈ ಕೆಳಕಂಡಂತೆ ಆದೇಶವನ್ನು ಹೊರಡಿಸಲಾಗಿದೆ.

ಸರ್ಕಾರದ ಆದೇಶ ಸಂಖ್ಯೆ:ಸಿಒ 169 ಸಿಎಲ್‌ಎಸ್ 2015, ಬೆಂಗಳೂರು, ದಿನಾಂಕ: 02.09.2015

ಪ್ರಸ್ತಾವನೆಯಲ್ಲಿ ವಿವರಿಸಿರುವ ಅಂಶಗಳ ಹಿನ್ನೆಲೆಯಲ್ಲಿ, ರಾಜ್ಯದ ಒಳನಾಡು ಮೀನು ಕೃಷಿಕರಿಗೆ/ ಮೀನುಗಾರರಿಗೆ ಸಹಕಾರಿ ಬ್ಯಾಂಕುಗಳ ಮೂಲಕ ಈ ಕೆಳಗೆ ತಿಳಿಸಲಾಗಿರುವ ಷರತ್ತುಗಳಿಗೊಳಪಟ್ಟು ಮೀನುಗಾರಿಕೆ ಚಟುವಟಿಕೆಗಳಿಗೆ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು/ಸಹಕಾರ ಸಂಘಗಳ ಮೂಲಕ ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ರೂ.1.00 ಲಕ್ಷದವರೆಗಿನ ಅಲ್ಪಾವಧಿ ಸಾಲಗಳನ್ನು ಆಯವ್ಯಯ "ಲೆಕ್ಕ ಶೀರ್ಷಿಕೆ 2425–00–107–2–41"ರಲ್ಲಿ ಒದಗಿಸಲಾಗಿರುವ ರೂ.240.00 ಲಕ್ಷ ಸಹಾಯಧನದಲ್ಲಿ ಈ ಕೆಳಗಿನ ಷರತ್ತು/ ಮಾನದಂಡಗಳನ್ವಯ ಜಾರಿಗೊಳಿಸಲು ಆಡಳಿತಾತ್ಮಕ ಅನುಮೋದನೆ ನೀಡಲಾಗಿದೆ.

1. ಈ ಯೋಜನೆಯು ದಿನಾಂಕ:01.04.2015 ರಿಂದ ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು/ ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು (ಪ್ರಾಥಮಿಕ ಸಹಕಾರ ಕೃಷಿ ಮತ್ತು ಗ್ರಾಮೀಣ ಅಭಿವೃದ್ಧಿ ಬ್ಯಾಂಕುಗಳು, ಪಟ್ಟಣ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು ಹಾಗೂ ಜಿಲ್ಲಾ ಕೇಂದ್ರ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು)/ ಕೃಷಿಯೇತರ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು ಒಳನಾಡು ಮೀನುಗಾರಿಕೆಗೆ ಸಂಬಂಧಪಟ್ಟ ಚಟುವಟಿಕೆಗಳಾದ:–
    1) ಮೀನು ಸಾಕಾಣಿಕೆ ಕೊಳದ ತಯಾರಿ (ಉಳುವುದು, ಕಳೆ ನಿರ್ಮೂಲನೆ, ಸುಣ್ಣ, ಕೂಲಿ ವೆಚ್ಚ)
    2) ಗೊಬ್ಬರ
    3) ಮೀನುಮರಿ ಖರೀದಿ (ಸಾಗಾಣಿಕೆ ವೆಚ್ಚ ಸೇರಿ)
    4) ಮೀನು ಆಹಾರ, ಔಷಧಿ ಇತ್ಯಾದಿ
    5) ಏರೇಟರ್, ನೀರೆತ್ತಲು ವಿದ್ಯುತ್ ವೆಚ್ಚ
    6) ಬಲೆ, ಹರಿಗೋಲು
    7) ಹಾಪಾ, ಕ್ರೇಟ್ಸ್, ಶಾಖನಿರೋಧಕ ಪೆಟ್ಟಿಗೆ
    8) ಮೀನುಮರಿ ಪಾಲನೆ ವೆಚ್ಚ
    9) ಮೀನು ಹಿಡುವಳಿ, ಸ್ವಚ್ಛತೆ, ವರ್ಗೀಕರಣ ಮತ್ತು ಪ್ಯಾಕಿಂಗ್ ಕೂಲಿ ಸಹಿತ ಹಾಗೂ
    10) ಇತರೆ ಖರ್ಚುಗಳಿಗೆ

    ನೀಡುವ ಅಲ್ಪಾವಧಿ ಸಾಲಗಳಿಗೆ ಮಾತ್ರ ಅನ್ವಯಿಸುತ್ತದೆ ಹಾಗೂ ನಬಾರ್ಡ್ ನಿಗದಿಪಡಿಸಿರುವ ಯೂನಿಟ್ ಕಾಸ್ಟ್‌ಗೆ ಒಳಪಟ್ಟಿರುತ್ತದೆ.
2. 'ಶೂನ್ಯ' ಬಡ್ಡಿ ದರವು ರೂ.1.00 ಲಕ್ಷದವರೆಗಿನ ಸಾಲಗಳಿಗೆ ಮಾತ್ರ ಅನ್ವಯವಾಗುತ್ತದೆ.
3. ರೂ.1.00 ಲಕ್ಷಗಳಿಗಿಂತ ಹೆಚ್ಚಿನ ಸಾಲಗಳ ಸಂಪೂರ್ಣ ಮೊತ್ತಕ್ಕೆ ಸಾಮಾನ್ಯ ಬಡ್ಡಿ ದರ ಅನ್ವಯವಾಗುತ್ತದೆ.
4. ಈ ಯೋಜನೆಯಡಿ ಒಳನಾಡು ಮೀನುಗಾರರಿಗೆ/ಮೀನು ಕೃಷಿಕರಿಗೆ ಪ್ರಾಥಮಿಕ ಹಂತದಲ್ಲಿ ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು/ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು ಒದಗಿಸುವ ಸಾಲಗಳ ಮೇಲೆ ಗೊತ್ತುಪಡಿಸಿದ ದರದಲ್ಲಿ ಸರ್ಕಾರವು ಬಡ್ಡಿ ಸಹಾಯಧನವನ್ನು ಸಂಬಂಧಪಟ್ಟ ಸಹಕಾರಿ ಬ್ಯಾಂಕುಗಳಿಗೆ/ಸಹಕಾರ ಸಂಘಗಳಿಗೆ ಒದಗಿಸುತ್ತದೆ.
5. ರೂ.1.00 ಲಕ್ಷದವರೆಗಿನ ಸಾಲಗಳನ್ನು ವಿತರಿಸಲು ಡಿ.ಸಿ.ಸಿ. ಬ್ಯಾಂಕುಗಳು, ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳಿಗೆ ಹಾಗೂ ಇತರೆ ಸಹಕಾರ ಸಂಘಗಳಿಗೆ ತಾನು ನಿಗದಿಪಡಿಸುವ ಯುಕ್ತ ಬಡ್ಡಿ ದರದಲ್ಲಿ ಸಾಲಗಳನ್ನು ಒದಗಿಸತಕ್ಕದ್ದು ಮತ್ತು ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು ಹಾಗೂ ಇತರೆ ಸಹಕಾರ ಸಂಘಗಳು ಮೀನುಗಾರರಿಗೆ ಶೂನ್ಯ ಬಡ್ಡಿದರದಲ್ಲಿ ಸಾಲಗಳನ್ನು ಒದಗಿಸತಕ್ಕದ್ದು.

6. ಮೀನುಗಾರಿಕೆ ಇಲಾಖೆ ಈ ಯೋಜನೆಗಳ ಬಗ್ಗೆ ಹೆಚ್ಚಿನ ಪ್ರಚಾರ ನೀಡಿ ಮೀನುಗಾರರಿಗೆ ಹೆಚ್ಚು ಸಾಲ ಒದಗಿಸಲು ಎಲ್ಲಾ ಅಗತ್ಯ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳತಕ್ಕದ್ದು.

7. ಕರ್ನಾಟಕ ರಾಜ್ಯ ಸಹಕಾರಿ ಅಪೆಕ್ಸ್ ಬ್ಯಾಂಕ್, ಡಿ.ಸಿ.ಸಿ. ಬ್ಯಾಂಕುಗಳು, ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು, ಕಸ್ಕಾರ್ಡ್ ಬ್ಯಾಂಕು, ಪಿಕಾರ್ಡ್ ಬ್ಯಾಂಕುಗಳು ಹಾಗೂ ಪಟ್ಟಣ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು/ಕೃಷಿಯೇತರ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು ಮೀನುಗಾರರಿಗೆ ಸಾಲವನ್ನು ಶೂನ್ಯ ಬಡ್ಡಿ ದರದಲ್ಲಿ ರೂ.1.00 ಲಕ್ಷಗಳ ಮಿತಿಗೊಳಪಟ್ಟು ಒದಗಿಸಲು ಅಗತ್ಯವಾದ ಕ್ರಮವನ್ನು ಕೈಗೊಳ್ಳತಕ್ಕದ್ದು.

8. ಈ ಯೋಜನೆಯಡಿ ವಿತರಿಸಲಾದ ಮೀನುಗಾರಿಕೆ ಸಾಲಗಳಿಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ಸರ್ಕಾರದ ಬದ್ಧತೆಯು ರೂ.1.00 ಲಕ್ಷದವರೆಗೆ ಹಾಗೂ ಸಾಲದ ಅವಧಿಗೆ ಅಥವಾ ಗರಿಷ್ಠ ಒಂದು ವರ್ಷಕ್ಕೆ ಮಾತ್ರ ಸೀಮಿತವಾಗಿರುತ್ತದೆ.

9. ಮೀನುಗಾರರು/ಮೀನು ಕೃಷಿಕರು ನಿಗದಿತ ಅವಧಿಯೊಳಗೆ (ದಿನಾಂಕ) ಅಥವಾ ಒಂದು ವರ್ಷದೊಳಗಾಗಿ ಸಾಲ ಮರುಪಾವತಿಸಲು ವಿಫಲರಾಗಿ ಸುಸ್ತಿದಾರರಾದಲ್ಲಿ ಬಡ್ಡಿ ಸಹಾಯಧನಕ್ಕೆ ಸರ್ಕಾರದ ಬದ್ಧತೆ ಇರುವುದಿಲ್ಲ ಹಾಗೂ ಸರ್ಕಾರದ ಬಡ್ಡಿ ಸಹಾಯಧನ ಸೌಲಭ್ಯ ಅನ್ವಯಿಸುವುದಿಲ್ಲ ಹಾಗೂ ಅಂತಹ ಸಾಲಗಳಿಗೆ ಸಾಮಾನ್ಯ ಬಡ್ಡಿ ಅನ್ವಯಿಸುತ್ತದೆ.

10. ಈ ಯೋಜನೆಯ ಅವಧಿಯಲ್ಲಿ ಬಡ್ಡಿ ಸಹಾಯಧನವು ಪೂರ್ಣವಾಗಿ ಮರು ಪಾವತಿಯಾಗುವ ಸಾಲಗಳಿಗೆ ಮಾತ್ರ ದೊರೆಯುತ್ತದೆ. ಈ ಸೌಲಭ್ಯವು ಸಾಲ ಮರುಪಾವತಿಯ ಗಡುವಿನ ದಿನಾಂಕದವರೆಗೆ ಅಥವಾ ಪೂರ್ಣವಾಗಿ ಸಾಲ ಮರುಪಾವತಿಯಾದ ದಿನಾಂಕ ಇದರಲ್ಲಿ ಯಾವುದು ಮೊದಲೋ ಆ ಅವಧಿಗೆ ಅನ್ವಯಿಸುತ್ತದೆ.

11. ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು/ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು (ಪ್ರಾಥಮಿಕ ಸಹಕಾರ ಕೃಷಿ ಮತ್ತು ಗ್ರಾಮೀಣ ಅಭಿವೃದ್ಧಿ ಬ್ಯಾಂಕುಗಳು, ಪಟ್ಟಣ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳು ಹಾಗೂ ಜಿಲ್ಲಾ ಸಹಕಾರ ಕೇಂದ್ರ ಬ್ಯಾಂಕುಗಳು) ಬಡ್ಡಿ ಸಹಾಯಧನವನ್ನು ಮೀನುಗಾರಿಕೆ ಸಾಲಗಳ ವಸೂಲಾತಿ ಪ್ರಮಾಣವನ್ನು ಆಧರಿಸಿ, ತ್ರೈಮಾಸಿಕ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಸಿದ್ಧಪಡಿಸಿ ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರ ಮಂಜೂರಾತಿಗಾಗಿ ಬೇಡಿಕೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

12. ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು, ಜಿಲ್ಲಾ ಕೇಂದ್ರ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳಿಗೆ ಸಂಯೋಜಿಸಲ್ಪಟ್ಟಿದ್ದಲ್ಲಿ ಸದರಿ ಸಹಕಾರ ಸಂಘಗಳ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಯವರು ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ತಯಾರಿಸಿ ಜಿಲ್ಲಾ ಕೇಂದ್ರ ಸಹಕಾರ ಬ್ಯಾಂಕಿನ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು. ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕರು ಈ ಬಿಲ್ಲುಗಳನ್ನು ದೃಢೀಕರಿಸಿ ಸಂಬಂಧಪಟ್ಟ ಸಹಕಾರ ಸಂಘಗಳ ಲೆಕ್ಕ ಪರಿಶೋಧನಾ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪ್ರಮಾಣೀಕರಿಸಿದ ನಂತರ, ಮೀನುಗಾರಿಕೆ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪರಿಶೀಲಿಸಿ, ತದನಂತರ, ಜಿಲ್ಲಾ ಸಹಕಾರ ಸಂಘಗಳ ಉಪನಿಬಂಧಕರು ದೃಢೀಕರಿಸಿ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಸಹಕಾರ ಅಪೆಕ್ಸ್ ಬ್ಯಾಂಕಿನ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು. ಸದರಿಯವರು ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

13. ಸದರಿ ಯೋಜನೆಗೆ ನಬಾರ್ಡ್ ಪುನರ್‌ಧನವಿದ್ದು, ಅಲ್ಪಾವಧಿ ಮೀನುಗಾರಿಕೆ ಉದ್ದೇಶಕ್ಕಾಗಿ ಸರ್ಕಾರದ ಬಡ್ಡಿ ಸಹಾಯಧನ ಲಭ್ಯವಾಗುತ್ತದೆ.

14. ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳು ವಾಣಿಜ್ಯ ಬ್ಯಾಂಕುಗಳಿಗೆ ಸಂಯೋಜಿಸಲ್ಪಟ್ಟಿದ್ದಲ್ಲಿ ಸಂಬಂಧಪಟ್ಟ ಸಂಘಗಳ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳು ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ತಯಾರಿಸಿ, ಜಿಲ್ಲೆಗೆ ಸಂಬಂಧಪಟ್ಟ ಸಹಕಾರ ಸಂಘಗಳ ಲೆಕ್ಕ ಪರಿಶೋಧನಾ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪ್ರಮಾಣೀಕರಿಸಿದ ನಂತರ, ಮೀನುಗಾರಿಕೆ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪರಿಶೀಲಿಸಿ, ಜಿಲ್ಲಾ ಸಹಕಾರ ಸಂಘಗಳ ಉಪನಿಬಂಧಕರು ದೃಢೀಕರಿಸಿ, ಕರ್ನಾಟಕ ರಾಜ್ಯ ಸಹಕಾರ ಅಪೆಕ್ಸ್ ಬ್ಯಾಂಕಿನ ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

15. ಪಿಕಾರ್ಡ್ ಬ್ಯಾಂಕುಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಕಸ್ಕಾರ್ಡ್ ಬ್ಯಾಂಕಿನ ಜಿಲ್ಲಾ ವ್ಯವಸ್ಥಾಪಕರು ತಯಾರಿಸಿ, ಮೀನುಗಾರಿಕೆ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪರಿಶೀಲಿಸಿ, ಜಿಲ್ಲಾ ಸಹಕಾರ ಸಂಘಗಳ ಉಪ ನಿಬಂಧಕರು ದೃಢೀಕರಿಸಿದ ನಂತರ ಕಸ್ಕಾರ್ಡ್ ಬ್ಯಾಂಕಿನ ನಿಯಮ 441 ರಡಿ ನೇಮಕವಾದ ಲೆಕ್ಕಪರಿಶೋಧನಾ ಉಪ/ಜಂಟಿ ನಿರ್ದೇಶಕರು ಪ್ರಮಾಣೀಕರಿಸಿದ ನಂತರ ಕರ್ನಾಟಕ ರಾಜ್ಯ ಸಹಕಾರ ಕೃಷಿ ಮತ್ತು ಗ್ರಾಮೀಣ ಅಭಿವೃದ್ಧಿ ಬ್ಯಾಂಕಿನ ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರು ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

16. ಪಟ್ಟಣ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳ/ಕೃಷಿಯೇತರ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಸಂಬಂಧಪಟ್ಟ ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಹಣಾಧಿಕಾರಿಗಳು ತಯಾರಿಸಿ, ಜಿಲ್ಲೆಗೆ ಸಂಬಂಧಪಟ್ಟ ಲೆಕ್ಕ ಪರಿಶೋಧನಾ ಉಪನಿರ್ದೇಶಕರು ಹಾಗೂ ಮೀನುಗಾರಿಕೆ ಉಪನಿರ್ದೇಶಕರಿಂದ ಪರಿಶೀಲಿಸಿ, ಪ್ರಮಾಣೀಕರಿಸಿದ ನಂತರ, ಜಿಲ್ಲಾ ಸಹಕಾರ ಸಂಘಗಳ ಉಪ ನಿಬಂಧಕರು ದೃಢೀಕರಿಸಿ, ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

17. ಪ್ರಾಥಮಿಕ ಕೃಷಿ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳು/ಮೀನುಗಾರರ ಸಹಕಾರ ಸಂಘಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಅಪೆಕ್ಸ್ ಬ್ಯಾಂಕಿನ ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರ ಮೂಲಕ, ಪಿಕಾರ್ಡ್ ಬ್ಯಾಂಕುಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಕಸ್ಕಾರ್ಡ್ ಬ್ಯಾಂಕಿನ ವ್ಯವಸ್ಥಾಪಕ ನಿರ್ದೇಶಕರ ಮೂಲಕ ಹಾಗೂ ಪಟ್ಟಣ ಸಹಕಾರ ಬ್ಯಾಂಕುಗಳಿಗೆ/ಕೃಷಿಯೇತರ ಪತ್ತಿನ ಸಹಕಾರ ಸಂಘಗಳಿಗೆ ಸಂಬಂಧಪಟ್ಟ ಕ್ಲೇಮು ಬಿಲ್ಲುಗಳನ್ನು ಜಿಲ್ಲಾ ಸಹಕಾರ ಸಂಘಗಳ ಉಪನಿಬಂಧಕರ ಮೂಲಕ ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರಿಗೆ ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

18. ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು ಈ ಯೋಜನೆಯನ್ನು ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಜಾರಿಗೊಳಿಸಲು ಅಗತ್ಯವಾದ ಎಲ್ಲಾ ಕ್ರಮಗಳನ್ನು ಕೈಗೊಳ್ಳತಕ್ಕದ್ದು ಮತ್ತು ಅಗತ್ಯವಾದ ಮಾರ್ಗದರ್ಶನ ಮತ್ತು ಸೂಚನೆಗಳನ್ನು ನೀಡಲು ಸಕ್ಷಮರಾಗಿರತಕ್ಕದ್ದು.

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19. ಈ ಯೋಜನೆಯನ್ನು ಪರಿಣಾಮಕಾರಿಯಾಗಿ ಅನುಷ್ಠಾನಗೊಳಿಸಲು ಕಾಲಕಾಲಕ್ಕೆ ಸರ್ಕಾರ ಮತ್ತು ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು ನೀಡಿದ ಸೂಚನೆಗಳನ್ನು ಸಹಕಾರ ಸಂಘಗಳು ಪಾಲಿಸತಕ್ಕದ್ದು.

20. ಸಹಕಾರ ಸಂಘಗಳ ನಿಬಂಧಕರು ಸಂಬಂಧಪಟ್ಟ ಪುನರ್ಭರಣ ಬಿಲ್ಲುಗಳು ಪರಿಶೀಲನೆ ಆದ ನಂತರ ದೃಢೀಕೃತ ಬಿಲ್ಲುಗಳ ಆಧಾರದ ಮೇಲೆ ಸಂಬಂಧಪಟ್ಟ ಸಂಸ್ಥೆಗಳಿಗೆ ಹಣವನ್ನು ಬಿಡುಗಡೆ ಮಾಡತಕ್ಕದ್ದು ಹಾಗೂ ಹಣದ ಉಪಯೋಗದ ಬಗ್ಗೆ ಪ್ರಗತಿ ವರದಿಗಳನ್ನು ಸಲ್ಲಿಸತಕ್ಕದ್ದು ಮತ್ತು ನಿಗಧಿತ ನಮೂನೆಯಲ್ಲಿ ಉಪಯೋಗ ಪ್ರಮಾಣ ಪತ್ರಗಳನ್ನು ಸಲ್ಲಿಸತಕ್ಕದ್ದು.

ಈ ಆದೇಶವನ್ನು ಯೋಜನಾ ಇಲಾಖೆ ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ:ಪಿಡಿ:52:ಎಫ್ಆರ್ಒ:2015, ದಿನಾಂಕ:19.06.2015 ಹಾಗೂ ಆರ್ಥಿಕ ಇಲಾಖೆಯ ಟಿಪ್ಪಣಿ ಸಂಖ್ಯೆ:ಎಫ್‌ಡಿ 269 ಇಎಕ್ಸ್‌ಪಿ–2/2015, ದಿನಾಂಕ:17.08.2015 ರಲ್ಲಿ ನೀಡಿರುವ ಸಹಮತಿ ಮೇರೆಗೆ ಹೊರಡಿಸಲಾಗಿದೆ.

ಕರ್ನಾಟಕ ರಾಜ್ಯಪಾಲರ ಆಜ್ಞಾನುಸಾರ ಮತ್ತು ಅವರ ಹೆಸರಿನಲ್ಲಿ,

ಎಂ.ವೆಂಕಟಸ್ವಾಮಿ

ವಿಶೇಷ ಕರ್ತವ್ಯಾಧಿಕಾರಿ ಹಾಗೂ ಪದನಿಮಿತ್ತ
ಸರ್ಕಾರದ ಉಪ ಕಾರ್ಯದರ್ಶಿ,
ಸಹಕಾರ ಇಲಾಖೆ.

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ಮುದ್ರಕರು ಹಾಗೂ ಪ್ರಕಾಶಕರು:– ಸಂಕಲನಾಧಿಕಾರಿಗಳು, ಕರ್ನಾಟಕ ರಾಜ್ಯಪತ್ರ, ಸರ್ಕಾರಿ ಕೇಂದ್ರ ಮುದ್ರಣಾಲಯ, ಬೆಂಗಳೂರು–59